CONSTRUCTION PERMIT
OFFICE OF AIR MANAGEMENT

Johns Manville International, Inc.
814 Richmond Avenue
Richmond, Indiana 47374

(herein known as the Permittee) is hereby authorized to construct the facilities listed in Section A (Source Summary) of this permit.

This permit is issued in accordance with the provisions of 326 IAC 2-1, 326 IAC 2-2, 40 CFR 52.780 and 40 CFR 124, with conditions listed on the attached pages.

Construction Permit No.: CP-177-5873-00006	
Issued by: Paul Dubenetzky, Branch Chief Office of Air Management	Issuance Date:

SECTION A SOURCE SUMMARY

This construction permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM) and presented in the permit application.

A.1 General Information [326 IAC 2-7-4(c)]

The Permittee owns and operates a wool fiberglass insulation manufacturing plant.

Responsible Official:	Robert W. Martin
Source Address:	814 Richmond Avenue, Richmond, Indiana 47374
Mailing Address:	P.O. Box 428, Richmond, Indiana 47375-0428
SIC Code:	3296
County Location:	Wayne
County Status:	Attainment for all criteria pollutants

A.2 Emission Units and Pollution Control Equipment Summary

This source modification for Johns Manville International, Inc., relates to changes in the forming processes of Lines 2, 3, and 6 to manufacture a more consistent wool fiberglass product and increase the production capacities of the existing manufacturing lines.

(a) Raw Material Handling, Storage and Batching Equipment for Lines 2, 3, and 6:

(1) One (1) existing rail car unloading station. The raw materials received in rail cars are bottom unloaded into a screw conveyor that transfers the material to the storage silos via a bucket elevator and a diverter. The particulate emissions are controlled by a boot lift device that seals off the bottom of the rail car;

(2) Eight (8) existing raw material batch silos. As raw materials are loaded into the batch silos, air within the silos is displaced to the atmosphere through vents at the top of each silo. These vents are equipped with fabric filters to control particulate emissions in the airstream before it is exhausted to emission points S21 through S28; and

(3) Three (3) existing day bins. The raw material from the batch silos is transferred to the day bins via an enclosed conveyor system. Particulate emissions in the airstream are controlled with fabric filters before the airstream is exhausted to emission points S31, S32, and S33.

(b) Melt Facilities:

(1) One (1) existing Line 2 natural gas-fired melt furnace. The actual average glass production rate of 4,901 pounds per hour shall increase to a maximum glass production rate of 7,200 pounds per hour. The maximum heat input capacity of the melt furnace has been included in an OAM confidential file. The molten material flows from the furnace to the fiber forming process. The particulate emissions in the airstream are controlled by the existing electrostatic precipitator before the airstream is exhausted to Stack S5;

(2) One (1) existing Line 3 natural gas-fired melt furnace. The actual average glass production rate of 4,950 pounds per hour shall increase to a maximum glass production rate of 7,200 pounds per hour. The maximum heat input capacity of the melt furnace has been included in an OAM confidential file. The molten material flows from the furnace to the fiber forming process. The particulate emissions in the airstream are controlled by an electrostatic precipitator before the airstream is exhausted to Stack S5; and

(3) One (1) existing Line 6 electric melter. The actual average glass production rate of 1,600 pounds per hour shall increase to a maximum glass production rate of 4,000 pounds per hour. The molten material flows from the melter to the fiber forming process. The particulate emissions from the melter are controlled by a fabric filter before being exhausted to Stack S7.

(c) Forming Facilities:

(1) One (1) modified Line 2 forming chamber for unbonded product. The actual average glass production rate of 4,901 pounds per hour shall increase to a maximum glass production rate of 7,200 pounds per hour. Natural gas shall be utilized in the combustion section of the forming chamber. The maximum heat input capacity of the combustion section has been included in an OAM confidential file. As fibers are formed, they are carried in the airstream towards a moving collection chain where they are captured and transferred to the shredding process. A water spray is applied to the airstream to control particulate matter emissions before the airstream is exhausted to Stack S2;

(2) One (1) modified Line 3 forming chamber for bonded and unbonded product. The actual average glass production rate of 4,950 pounds per hour shall increase to a maximum glass production rate of 7,200 pounds per hour. Natural gas shall be utilized in the combustion section of the forming chamber. The maximum heat input capacity of the combustion section has been included in an OAM confidential file. As fibers are formed, they are carried in the airstream towards a moving collection chain where they are captured. A binder is added to the bonded product which is transferred to a curing oven and the unbonded product is transferred directly to the shredding process. A water spray is applied to the airstream to control particulate matter emissions from unbonded product before the airstream is exhausted to Stack S3. A water spray and venturi scrubber are both utilized to control particulate matter emissions from bonded product before the airstream is exhausted to Stack S3; and

(3) One (1) modified Line 6 forming chamber for bonded and unbonded product. The actual average glass production rate of 1,600 pounds per hour shall increase to a maximum glass production rate of 4,000 pounds per hour. Natural gas shall be utilized in the combustion section of the forming chamber. The maximum heat input capacity of the combustion section has been included in an OAM confidential file. As fibers are formed, they are carried in the airstream towards a moving collection chain where they are captured. A binder is added to the bonded product which is transferred to a curing oven and the unbonded product is transferred directly to the shredding process. A water spray is applied to the airstream to control particulate matter emissions before the airstream is exhausted to Stack S2.

(d) Curing and Cooling Facilities:

(1) One (1) existing Line 3 natural gas-fired curing oven and cooling process for bonded product. The actual average glass production rate of 4,950 pounds per hour shall increase to a maximum glass production rate of 7,200 pounds per hour. During bonded production, particulate emissions in the airstream are controlled by a high efficiency air filter (HEAF) before the airstream is exhausted to Stack S3; and

(2) One (1) existing Line 6 natural gas-fired curing oven for bonded product. The actual average glass production rate of 1,600 pounds per hour shall increase to a maximum glass production rate of 4,000 pounds per hour. The particulate emissions in the airstream are controlled by a high efficiency air filter (HEAF) before the airstream is exhausted to Stack S2.

(e) Shredding and Packaging Facilities:

(1) One (1) existing Line 2 shredding process for unbonded product. The shredded fiber is pneumatically transferred to the packaging area. During the shredding process an anti-static agent and oil are applied to the product and any particulate emissions in the airstream are controlled by two baghouses before the airstream is exhausted to Stacks S85 and S86;

(2) One (1) existing Line 2 packaging area for unbonded product. The airstream is separated from the unbonded shredded product via a cyclone. Fiberglass collected in the cyclones is deposited in the packaging hopper and subsequently packaged for sale. The particulate emissions in the cyclone airstream are controlled by two (2) baghouses before the airstream is exhausted to Stacks S85 and S86;

(3) One (1) existing Line 3 shredding process for unbonded product. The shredded fiber is pneumatically transferred to the packaging area. During the shredding process an anti-static agent and oil are applied to the product and any particulate emissions in the airstream are controlled by two baghouses before the airstream is exhausted to Stacks S12 and S13;

(4) One (1) existing Line 3 packaging area for unbonded and bonded product. The airstream is separated from the unbonded shredded product via a cyclone. Fiber glass collected in the cyclone is deposited in the packaging hopper and subsequently packaged for sale. The particulate matter emissions in the cyclone airstream are controlled by two (2) baghouses before the airstream is exhausted to Stacks S12 and S13. The bonded product from Line 3 is trimmed and packaged and generates negligible particulate emissions that are uncontrolled;

(5) One (1) existing Line 6 shredding process for unbonded and bonded product. The shredded fiber is then pneumatically transferred to the packaging area. During the shredding process an anti-static agent and oil are applied to the product and any particulate emissions in the airstream are controlled by a baghouse before the airstream is exhausted to Stack S11; and

(6) One (1) existing Line 6 packaging area for unbonded and bonded product. The airstream is separated from the unbonded shredded product via a cyclone. Fiber glass collected in the cyclone is deposited in the packaging hopper and subsequently packaged for sale. The particulate emissions in the cyclone airstream are controlled by a baghouse before being exhausted to Stack S11. The bonded product from Line 6 may also be trimmed and packaged. This operation generates negligible particulate matter emissions that are uncontrolled.

(f) Ancillary Equipment:

(1) One (1) existing EP dust recycling fan that is exhausted to stack S34;

(2) One (1) existing cold end housekeeping system. The particulate emissions in the airstream are controlled by a baghouse before the airstream is exhausted to stack S10; and

(3) One (1) existing natural gas-fired boiler with a rated capacity of 25 MMBtu per hour and the capability to utilize propane as a backup fuel. The airstream from the boiler is exhausted to stack S4.

The above ancillary equipment has not been physically modified to handle the additional throughput capacity. The boiler originally used oil fuel, but has been modified to use only natural gas which is a cleaner burning fuel.

(g) Two (2) new standby diesel generators, rated at 635 hp and 700 hp, exhausting to stacks S162 and S163, respectively. These generators shall replace three (3) existing generators, each rated at 155 hp.

A.3 Permit Supersession

This permit shall supersede all previous permits issued to the source.

Section B Construction Conditions

B.1 General Construction Conditions

(a) The data and information supplied with the application shall be considered part of this permit. Prior to any proposed change in construction which may result in an increase in allowable emissions, the change must be approved by IDEM, OAM.

(b) This permit to construct does not relieve the Permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.

(c) Notwithstanding Construction Condition B.4, all requirements and conditions of this construction permit shall remain in effect unless modified in a manner consistent with procedures established for modifications of construction permits pursuant to 326 IAC 2 (Permit Review Rules).

(d) When the facility is constructed and placed into operation, the operation conditions required by Section C and Section D shall be met.

B.2 Effective Date of the Permit

Pursuant to 40 CFR Parts 124.15 124.19 and 124.20, the effective date of this permit will be thirty-three (33) days from its issuance if comments are received.

B.3 Source Obligation

Pursuant to 326 IAC 2-2-8(a)(1) (PSD Source Obligation), approval to construct shall become invalid if construction is:

(a) Not commenced within eighteen (18) months after receipt of such approval;

(b) Discontinued for a period of eighteen (18) months or more; or

(c) Not completed within a reasonable time.

The Commissioner may extend the eighteen (18) month period upon a satisfactory showing that an extension is justified.

B.4 First Time Operation Permit

This document shall also become a first-time operation permit pursuant to 326 IAC 2-1-4 (Operating Permits) when, prior to start of operation, the following requirements are met:

(a) The attached affidavit of construction shall be submitted to:

Indiana Department of Environmental Management
Permit Administration & Development Section, Office of Air Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, IN 46206-6015

verifying that the facilities were constructed as proposed in the application. The facilities covered in the Construction Permit may begin operating on the date the Affidavit of Construction is postmarked or hand delivered to IDEM, OAM.

(b) If construction is completed in phases; i.e., the entire construction is not done continuously, a separate affidavit must be submitted for each phase of construction. Any permit conditions associated with operation start up dates such as stack testing for New Source Performance Standards (NSPS) shall be applicable to each individual phase.

(c) The Permittee shall receive an Operation Permit Validation Letter from the Chief of the Permit Administration & Development Section and attach it to this document.

(d) The operation permit will be subject to annual operating permit fees pursuant to 326 IAC 2-1-7.1(Fees).

(e) The Permittee has submitted their Part 70 permit application (T-177-7720-00006) on December 13, 1996 for the existing source. The equipment being reviewed under this permit shall be incorporated in the submitted Part 70 application.

B.5 NSPS Reporting Requirement

Pursuant to the New Source Performance Standards (NSPS), Part 60.7, the source owner/operator is hereby advised of the requirement to report the following at the appropriate times:

(a) Commencement of construction date (no later than 30 days after such date);

(b) Anticipated start-up date (not more than 60 days or less than 30 days prior to such date);

(c) Actual start-up date (within 15 days after such date); and

(d) Date of performance testing (at least 30 days prior to such date), when required by a condition elsewhere in this permit.

Reports are to be sent to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, IN 46206-6015

The application and enforcement of these standards have been delegated to IDEM, OAM. The requirements of 40 CFR Part 60 are also federally enforceable.

SECTION C SOURCE OPERATION CONDITIONS

Entire Source

General Conditions:

C.1 General Operation Conditions

(a) The data and information supplied in the application shall be considered part of this permit. Prior to any change in the operation which may result in an increase in allowable emissions exceeding those specified in 326 IAC 2-1-1 (Construction and Operating Permit Requirements), the change must be approved by IDEM, OAM.

(b) The Permittee shall comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder.

C.2 Transfer of Permit

Pursuant to 326 IAC 2-1-6 (Transfer of Permits), the following requirements shall apply:

(a) In the event that ownership of this wool fiberglass insulation facility is changed, the Permittee shall notify:

Indiana Department of Environmental Management
Permits Branch, Office of Air Management
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015

within thirty (30) days of the change. Notification shall include the date or proposed date of said change.

(b) A written notification shall be sufficient to transfer the permit from the current owner to the new owner.

(c) IDEM, OAM shall reserve the right to issue a new permit.

C.3 Permit Revocation

Pursuant to 326 IAC 2-1-9(a)(Revocation of Permits), this permit to construct and operate may be revoked for any of the following causes:

(a) violation of any conditions of this permit;

(b) failure to disclose all the relevant facts, or misrepresentation in obtaining this permit;

(c) changes in regulatory requirements that mandate either a temporary or permanent reduction of discharge of contaminants. However, the amendment of appropriate sections of this permit shall not require revocation of this permit;

(d) noncompliance with orders issued pursuant to 326 IAC 1-5 (Episode Alert Levels) to reduce emissions during an air pollution episode; or

(e) for any cause which establishes in the judgment of IDEM, OAM, the fact that continuance of this permit is not consistent with purposes of 326 IAC 2-1 (Permit Review Rules).

C.4 Availability of Permit

Pursuant to 326 IAC 2-1-3(l), the Permittee shall maintain the applicable permit on the premises of this source and shall make this permit available for inspection by IDEM, OAM, or other public official having jurisdiction.

C.5 Preventive Maintenance Plan

Pursuant to 326 IAC 1-6-3 (Preventive Maintenance Plans), the Permittee shall prepare and maintain a Preventive Maintenance Plan, including the following information:

(a) identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices;

(b) a description of the items or conditions that will be inspected and the inspection schedule for said items or conditions; and

(c) identification of the replacement parts which will be maintained in inventory for quick replacement.

The Preventive Maintenance Plan shall be submitted to IDEM, OAM upon request and shall be subject to review and approval.

C.6 Malfunction Condition

Pursuant to 326 IAC 1-6-2 (Records; Notice of Malfunction):

(a) A record of all malfunctions, including startups or shutdowns of any facility or emission control equipment, which result in violations of applicable air pollution control regulations or applicable emission limitations shall be kept and retained for a period of three (3) years and shall be made available to IDEM, OAM or appointed representative upon request.

(b) When a malfunction of any facility or emission control equipment occurs which lasts more than one (1) hour, said condition shall be reported to IDEM, OAM, using the Malfunction Report Forms (2 pages). Notification shall be made by telephone or facsimile, as soon as practicable, but in no event later than four (4) daytime business hours after the beginning of said occurrence.

(c) Failure to report a malfunction of any emission control equipment shall constitute a violation of 326 IAC 1-6, and any other applicable rules. Information of the scope and expected duration of the malfunction shall be provided, including the items specified in 326 IAC 1-6-2(a)(1) through (6).

(d) Malfunction is defined as any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. [326 IAC 1-2-39]

Emission Limitations and Standards:

C.7 Fugitive Dust Emissions

Pursuant to 326 IAC 6-4 (Fugitive Dust Emissions), the Permittee shall be in violation of 326 IAC 6-4 (Fugitive Dust Emissions) if any of the criteria specified in 326 IAC 6-4-2(1) through (4) are violated. Observations of visible emissions crossing the property line of the source at or near ground level must be made by a qualified representative of IDEM, OAM. [326 IAC 6-4-5(c)]

C.8 Opacity Limitations

Pursuant to 326 IAC 5-1-2 (Opacity Limitations) except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), the opacity shall meet the following:

(a) opacity shall not exceed an average of 40% any one (1) six (6) minute averaging period.

(b) opacity shall not exceed 60% for more than a cumulative total of 15 minutes (60 readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a 6-hour period.

Compliance Determination and Monitoring:

C.9 Opacity Determination

Pursuant to 326 IAC 5, 326 IAC 6, and 326 IAC 12, opacity from the source shall be measured using one or both of the following procedures to demonstrate compliance with the opacity limitations:

(a) opacity observations shall be performed in accordance with the applicable procedures under 326 IAC 5-1-4 and 40 CFR 60, Appendix A, Method 9; or

(b) continuous opacity monitoring data shall be recorded in accordance with the applicable procedures under 40 CFR 60, Appendix B, Performance Specification 1 and 326 IAC 3-5.

A violation determined by one of the above methods shall not be refuted by the other method.

C.10 Ambient Monitoring

That pursuant to 326 IAC 2-2-4, the Permittee shall establish ambient monitoring site for PM_{10} as described in (a) through (f). These sites shall begin collecting valid data prior to the commencement of operation of the modified fiberglass manufacturing lines.

The monitoring shall be conducted for a minimum of 36 months after the commencement of operation of the modified fiberglass manufacturing lines.

(a) The monitoring must be performed using U.S. EPA approved methods, procedures, and quality assurance programs. A Quality Assurance Plan and Protocol shall be submitted to:

Indiana Department of Environmental Management
Ambient Monitoring Section, Office of Air Management
2525 North Shadeland Avenue
Indianapolis, Indiana 46219

within 90 calendar days prior to commencement of monitoring. The Quality Assurance Plan and Protocol must be approved by IDEM, OAM prior to commencement of monitoring.

(b) The two (2) monitoring sites shall be established at a downwind location and an upwind location to be approved by IDEM, OAM. All monitors shall meet the operating and maintenance criteria outlined in IDEM, OAM Quality Assurance Manual.

(c) The ambient data for PM_{10} shall be collected for a minimum period of 36 months following the initial compliance demonstration. IDEM, OAM reserves the authority to require the Permittee to monitor for compliance with the National Ambient Air Quality Standards (NAAQS) for $PM_{2.5}$ in the event that such information is necessary to demonstrate compliance with the standard.

(d) The monitoring site(s) shall measure the following meteorological parameters:

(1) wind direction,

(2) wind speed, and

(3) temperature.

(e) A quarterly summary of the monitoring data shall be submitted to:

Indiana Department of Environmental Management
Ambient Monitoring Section, Office of Air Management
2525 North Shadeland Avenue
Indianapolis, Indiana 46219

within ninety (90) calendar days after the end of the quarter being reported.

(f) After the 36 month period of monitoring, the Permittee may petition IDEM, OAM for the removal of the monitoring site if it has been established that the PM levels will continue to comply with the NAAQS with an adequate margin of safety. The monitoring requirements may be continued beyond the minimum 36 month period if there exists a threat to the NAAQS or if determined to be warranted by IDEM, OAM.

C.11 Emission Reporting Requirement

Pursuant to 326 IAC 2-6 (Emission Reporting), the Permittee shall annually submit an emission statement of the source. This statement must be received by July 1 of each year and must comply with the minimum requirements specified in 326 IAC 2-6-4.

The submittal should cover the period defined in 326 IAC 2-6-2(8) (Emission Statement Operating Year). The annual statement must be submitted to:

Indiana Department of Environmental Management
Office of Air Management - Technical Support and Modeling
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015.

The annual emission statement required by this permit shall be considered timely if:

(a) delivered by U.S. mail and postmarked on or before the date it is due; or

(b) delivered by any other method if it is received and stamped by IDEM, OAM on or before the date it is due.

SECTION D.1 FACILITY OPERATION CONDITIONS FOR RAW MATERIAL HANDLING, STORAGE AND BATCHING EQUIPMENT

(a) Raw Material Handling, Storage and Batching Equipment for Lines 2, 3, and 6:

(1) One (1) existing rail car unloading station. The raw materials received in rail cars are bottom unloaded into a screw conveyor that transfers the material to the storage silos via a bucket elevator and a diverter. The particulate emissions are controlled by a boot lift device that seals off the bottom of the rail car;

(2) Eight (8) existing raw material batch silos. As raw materials are loaded into the batch silos, air within the silos is displaced to the atmosphere through vents at the top of each silo. These vents are equipped with fabric filters to control particulate emissions in the airstream before it is exhausted to emission points S21 through S28; and

(3) Three (3) existing day bins. The raw material from the batch silos is transferred to the day bins via an enclosed conveyor system. Particulate emissions in the airstream are controlled with fabric filters before the airstream is exhausted to emission points S31, S32, and S33.

Emission Limitations and Standards:

D.1.1 Particulate Matter Limitations

Pursuant to 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules), from the raw material handling, storage and batching facilities stated above shall comply with the following limitations:

(a) The unloading station shall be equipped with a bootlift device and shall not exceed an average of three percent (3%) opacity in any 24 consecutive readings recorded in 15 second intervals in accordance with the applicable requirements of 40 CFR 60, Appendix A, Method 9;

(b) The raw material conveyor system shall be enclosed and shall not exceed an average of three percent (3%) opacity in any 24 consecutive readings recorded in 15 second intervals in accordance with the applicable requirements of 40 CFR 60, Appendix A, Method 9; and

(c) The raw material batch silos and day bins shall be equipped with fabric filters and shall not exceed an average of three percent (3%) opacity in any 24 consecutive readings recorded in 15 second intervals in accordance with the applicable requirements of 40 CFR 60, Appendix A, Method 9.

D.1.2 Visible Emission Notations

Visible emission notations shall be performed for the storage and handling facilities at least once each day that loading and conveying operations are conducted. A trained employee will record whether emissions are normal or abnormal.

(a) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, 80% of the time the process is in operation, not counting start up or shut down time.

(b) In the case of batch or discontinuous operation, readings shall be taken during that part of the operation specified in the facility's specific condition prescribing visible emissions.

(c) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal and abnormal visible emissions for that specific process.

(d) The Preventive Maintenance Plan for this facility shall contain troubleshooting contingency and corrective actions for when an abnormal emission is observed.

D.1.3 Recordkeeping Requirement

(a) The Permittee shall maintain daily logs of the visible emission notations required by Operation Condition D.1.2.

(b) Records shall be retained for a minimum period of five (5) years. Records of the previous three (3) years shall be kept at the source location and be made available within one (1) hour upon verbal request of an IDEM, OAM, representative. Records of the remaining two (2) years may be stored elsewhere provided they be made available to the OAM within thirty (30) days after written request.

(c) Records of required monitoring information shall include, where applicable:

(1) the date, place, and time of sampling or measurements;

(2) the dates analyses were performed;

(3) the company or entity performing the analyses;

(4) the analytic techniques or methods used;

(5) the results of such analyses; and

(6) the operating conditions existing at the time of sampling or measurement.

(d) Support information shall include, where applicable:

(1) copies of all reports required by this permit;

(2) all original strip chart recordings for continuous monitoring instrumentation;

(3) all calibration and maintenance records; and

(4) records of any required preventive maintenance and corrective actions that were implemented. Such records shall briefly describe what was done and indicate who did it. Such records may include, but are not limited to work orders, quality assurance procedures, quality control procedures, operator's standard operating procedures, manufacturer's specifications or their equivalent, and equipment "troubleshooting" guidance.

(e) All record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance.

SECTION D.2 FACILITY OPERATION CONDITIONS FOR THE MELT FURNACES

(a) Melt Facilities:

(1) One (1) existing Line 2 natural gas-fired melt furnace. The actual average glass production rate of 4,901 pounds per hour shall increase to a maximum glass production rate of 7,200 pounds per hour. The maximum heat input capacity of the melt furnace has been included in an OAM confidential file. The molten material flows from the furnace to the fiber forming process. The particulate emissions in the airstream are controlled by the existing electrostatic precipitator before the airstream is exhausted to Stack S5;

(2) One (1) existing Line 3 natural gas-fired melt furnace. The actual average glass production rate of 4,950 pounds per hour shall increase to a maximum glass production rate of 7,200 pounds per hour. The maximum heat input capacity of the melt furnace has been included in an OAM confidential file. The molten material flows from the furnace to the fiber forming process. The particulate emissions in the airstream are controlled by an electrostatic precipitator before the airstream is exhausted to Stack S5; and

(3) One (1) existing Line 6 electric melter. The actual average glass production rate of 1,600 pounds per hour shall increase to a maximum glass production rate of 4,000 pounds per hour. The molten material flows from the melter to the fiber forming process. The particulate emissions from the melter are controlled by a fabric filter before being exhausted to Stack S7.

Emission Limitations and Standards:

D.2.1 Pollutant Emission Limitations

(a) Pursuant to 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules), each furnace shall comply with the following limitations:

Facility	Pollutant Emission Limitations, lb/ton of glass pulled		
	PM/PM_{10}	VOC	CO
Line 2 Melt Furnace	0.25	0.38	0.85
Line 3 Melt Furnace	0.25	0.38	0.85
Line 6 Melter	0.45	0.38	0.85

PM/PM_{10} means that the PM limit and the PM_{10} limit are the same and shall be measured as the sum of the filterable and condensible fractions.

(b) Pursuant to 326 IAC 2-2-3(a)(3) (PSD Rules) and 326 IAC 6-1-14 (Nonattainment Area Particulate Limitations), the particulate matter (PM) emissions from each furnace shall comply with the following limitations:

Facility	PM/PM_{10} Emission Limitations	
	tons/yr	gr/dscf
Line 2 Melt Furnace	7.8	0.01
Line 3 Melt Furnace		0.01
Line 6 Melter	0.1	0.020

(c) The particulate matter emissions established in (a) and (b) above shall supersede the following Operation Permit Conditions:

Facility	Operation Permit Condition
Lines 2 and 3 Melt Furnaces	Condition 6 of Operation Permit No. 89-02-88-0164, issued on April 2, 1984 and Condition 5 of Operation Permit No. 89-02-88-0165, issued on April 2, 1984
Line 2 Melt Furnace and Line 2 Forming Process	Operation Condition 4 of Construction Permit No. 177-3394-00006, issued April 11, 1994

(d) In order to avoid the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration), each furnace shall comply with the following limitations:

Facility	Pollutant Emission Limitations, lbs/hr	
	NOx	SO2
Line 2 Melt Furnace	3.41	0.20
Line 3 Melt Furnace	3.41	0.20
Line 6 Melter	0.08	0.11

D.2.2 Operation Standards

Pursuant to 326 IAC 2-2-3(a)(3), the furnaces shall comply with the following limitations:

(a) Line 2 Melt Furnace shall not exceed a glass production rate of 7,200 pounds per hour;

(b) Line 3 Melt Furnace shall not exceed a glass production rate of 7,200 pounds per hour; and

(c) Line 6 Melter shall not exceed a glass production rate of 4,000 pounds per hour.

Compliance Determination and Monitoring:

D.2.3 Performance Testing

(a) Pursuant to 326 IAC 2-1-3 (Construction and Operating Permit Requirements), the following compliance stack tests shall be performed for the following facilities within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up:

Stack	Process	PM/PM_{10} [1]	NOx [2]
S5	Line 2	0.25 lb/ton 0.01 gr/dscf	3.41 lbs/hr
S5	Line 3	0.25 lb/ton 0.01 gr/dscf	3.41 lbs/hr
S7	Line 6	0.45 lb/ton 0.020 gr/dscf	No Testing Required

[1] PM/PM_{10} means that the PM limit and the PM_{10} limit are the same. PM shall be measured in accordance with 40 CFR 60, Appendix A, Method 5. PM_{10} shall be measured in accordance with 40 CFR 51, Appendix M, Methods 201A and 202.

[2] The MMBtu per hour ratings of each combustion unit to be tested (Lines 2 and 3 Melt Furnaces and Lines 2, 3, and 6 Manufacturing Processes) shall be included in the test protocol.

(b) All compliance tests shall be performed according to the provisions of 326 IAC 3-6 (Source Sampling Procedures), except as provided elsewhere in this permit (Construction Condition B.5), utilizing methods approved by IDEM, OAM.

(1) A test protocol shall be submitted to:

Indiana Department of Environmental Management
Office of Air Management - Compliance Data Section
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

at least thirty-five (35) days before the intended test date. The Permittee shall develop and submit with the protocol for approval by IDEM, OAM, standard operating procedures to be followed during sampling, handling, analysis, quality control, quality assurance, and data reporting.

(2) The Compliance Data Section shall be notified of the actual test date at least two (2) weeks prior to the date.

(3) All test reports must be received by the Compliance Data Section within 45 days of completion of the testing.

(4) When the results of a stack test performed exceed the level specified in any condition of this permit, the Permittee shall take appropriate corrective actions. The Permittee shall submit a description of these corrective actions to IDEM, OAM, within thirty (30) days of receipt of the test results. The Permittee shall take appropriate action to minimize emissions from the affected facility while the corrective actions are being implemented. IDEM, OAM shall notify the Permittee within thirty (30) days, if the corrective actions taken are deficient. The Permittee shall submit a description of additional corrective actions taken to IDEM, OAM within thirty (30) days of receipt of the notice of deficiency. IDEM, OAM reserves the authority to use enforcement activities to resolve noncompliant stack tests.

(5) Whenever the results of the stack test performed exceed the level specified in this permit, a second test to demonstrate compliance shall be performed within 120 days. Failure of the second test to demonstrate compliance may be grounds for immediate revocation of this permit to operate the affected facility.

(c) IDEM, OAM retains the authority under 326 IAC 2-1-4(f) to require the Permittee to perform additional and future compliance testing as necessary.

D.2.4 Electrostatic Precipitator (ESP) Operating Condition

The electrostatic precipitator for the Line 2 and Line 3 natural gas-fired melt furnaces shall be operated at all times when either furnace is in operation.

(a) The Permittee shall maintain the field voltages of the ESP at a minimum level of 20 kilovolts or a minimum level determined from a compliant stack test. At least once per day the Permittee shall monitor and record the primary voltage and amperage of the T/R sets and the voltages and amperages of the three (3) fields. The Preventive Maintenance Plan for the ESP shall contain troubleshooting contingency and corrective actions for the ESP when the voltage of the T-R set drops five (5) direct current kilovolts below the predetermined baseline or if less than 90% of the total T-R sets are functioning.

(b) The instrument used for determining the T-R set voltage shall be subject to approval by IDEM, OAM, and shall be calibrated at least once every six (6) months.

(c) An inspection of the ESP shall be performed each calendar quarter. A record shall be kept of the results of the inspection and the number of ESP part(s) replaced.

(d) In the event that an ESP failure has been observed:

(1) All reasonable measures shall be taken to correct, as expeditiously as practicable, the conditions causing the emissions to exceed the allowable limits;

(2) All possible steps shall be taken to minimize the impact of the excessive emissions on ambient air quality which may include but not limited to curtailment of operation and/or shutdown of the facility; and

(3) Failure or partial failure of the control device shall be reported to IDEM, OAM according to the procedure specified for malfunctions in 326 IAC 1-6-2, in which case the provisions of 326 IAC 1-6-5 may apply at the discretion of IDEM, OAM.

D.2.5 Baghouse Operating Condition

The baghouse for the Line 6 electric melter shall be operated at all times when the melter is in operation.

(a) The Permittee shall take readings of the total static pressure drop across the baghouse, at least once per day. The pressure drop across the baghouse shall be maintained within a pressure drop range of 1.5 and 7.0 inches of water as determined from the manufacturer specifications. The pressure drop range may be adjusted to incorporate the pressure drop range determined by a compliant stack test. If the water pressure falls outside of the determined range, corrective action shall be taken in accordance with the Permittee's Preventive Maintenance Plan. The company shall document the cause of the out-of-range reading and take immediate action to correct any problem. Failure or partial failure of the control device shall be reported to IDEM, OAM according to the procedure specified for malfunctions in 326 IAC 1-6-2, in which case the provisions of 326 IAC 1-6-5 may apply at the discretion of IDEM, OAM.

(b) The instrument used for determining the pressure shall be subject to approval by IDEM, OAM and shall be calibrated at least once every six (6) months.

(c) The gauge employed to take the pressure drop across the baghouse or any part of the facility shall have a scale such that the expected normal reading shall be no less than 20 percent of full scale and be accurate within $\pm$ 2 percent of full scale reading. The instrument shall be quality assured and maintained as specified by the vendor.

(d) An inspection of the baghouse shall be performed during each major plant outage or at a minimum of two (2) times per year. Defective bags shall be replaced. A record shall be kept of the results of the inspection and the number of bags replaced.

(e) In the event that a bag's failure has been observed and emissions temporarily exceed the standards:

(1) All reasonable measures shall be taken to correct, as expeditiously as practicable, the conditions causing the emissions to exceed the allowable limits;

(2) All possible steps shall be taken to minimize the impact of the excessive emissions on ambient air quality which may include but not limited to curtailment of operation and/or shutdown of the facility; and

(3) Failure or partial failure of the control device shall be reported to IDEM, OAM according to the procedure specified for malfunctions in 326 IAC 1-6-2, in which case the provisions of 326 IAC 1-6-5 may apply at the discretion of IDEM, OAM.

D.2.6 Visible Emission Notations

Visible emission notations of all exhaust to the atmosphere from the ESP and the baghouse associated with the melt operations shall be performed once per working shift (during daylight hours). A trained employee will record whether emissions are normal or abnormal.

(a) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, 80% of the time the process is in operation, not counting start up or shut down time.

(b) In the case of batch or discontinuous operation, readings shall be taken during that part of the operation specified in the facility's specific condition prescribing visible emissions.

(c) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal and abnormal visible emissions for that specific process.

(d) The Preventive Maintenance Plan for this facility shall contain troubleshooting contingency and corrective actions for when an abnormal emission is observed.

D.2.7 Fuel Limitation

The Lines 2 and 3 melt furnaces shall only use natural gas to demonstrate compliance with the emission limitations required by Operation Condition D.2.1.

Recordkeeping and Reporting Requirements:

D.2.8 Recordkeeping Requirement

(a) The Permittee shall maintain the following records:

(1) daily logs of the ESP parameters established in Operation Condition D.2.4(a), semi-annual logs of the parameters established in Operation Condition D.2.4(b) and quarterly logs of the parameters established in Operation Condition D.2.4(c);

(2) daily logs of the baghouse parameters established in Operation Condition D.2.5(a), semi-annual logs of the parameters established in Operation Condition D.2.5(b) and quarterly logs of the parameters established in Operation Condition D.2.5(d); and

(3) daily logs of the visible emission notations required by Operation Condition D.2.6.

(b) Records shall be retained for a minimum period of five (5) years. Records of the previous three (3) years shall be kept at the source location and be made available within one (1) hour upon verbal request of an IDEM, OAM, representative. Records of the remaining two (2) years may be stored elsewhere provided they be made available to the OAM within thirty (30) days after written request.

(c) Records of required monitoring information shall include, where applicable:

(1) the date, place, and time of sampling or measurements;

(2) the dates analyses were performed;

(3) the company or entity performing the analyses;

(4) the analytic techniques or methods used;

(5) the results of such analyses; and

(6) the operating conditions existing at the time of sampling or measurement.

(d) Support information shall include, where applicable:

(1) copies of all reports required by this permit;

(2) all original strip chart recordings for continuous monitoring instrumentation;

(3) all calibration and maintenance records; and

(4) records of any required preventive maintenance and corrective actions that were implemented. Such records shall briefly describe what was done and indicate who did it. Such records may include, but are not limited to work orders, quality assurance procedures, quality control procedures, operator's standard operating procedures, manufacturer's specifications or their equivalent, and equipment "troubleshooting" guidance.

(e) All record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance.

SECTION D.3 FACILITY OPERATION CONDITIONS FOR THE MANUFACTURING LINES - FORMING, CURING, AND COOLING

(a) Forming Facilities:

(1) One (1) modified Line 2 forming chamber for unbonded product. The actual average glass production rate of 4,901 pounds per hour shall increase to a maximum glass production rate of 7,200 pounds per hour. Natural gas shall be utilized in the combustion section of the forming chamber. The maximum heat input capacity of the combustion section has been included in an OAM confidential file. As fibers are formed, they are carried in the airstream towards a moving collection chain where they are captured and transferred to the shredding process. A water spray is applied to the airstream to control particulate matter emissions before the airstream is exhausted to Stack S2;

(2) One (1) modified Line 3 forming chamber for bonded and unbonded product. The actual average glass production rate of 4,950 pounds per hour shall increase to a maximum glass production rate of 7,200 pounds per hour. Natural gas shall be utilized in the combustion section of the forming chamber. The maximum heat input capacity of the combustion section has been included in an OAM confidential file. As fibers are formed, they are carried in the airstream towards a moving collection chain where they are captured. A binder is added to the bonded product which is transferred to a curing oven and the unbonded product is transferred directly to the shredding process. A water spray is applied to the airstream to control particulate matter emissions from unbonded product before the airstream is exhausted to Stack S3. A water spray and venturi scrubber are both utilized to control particulate matter emissions from bonded product before the airstream is exhausted to Stack S3; and

(3) One (1) modified Line 6 forming chamber for bonded and unbonded product. The actual average glass production rate of 1,600 pounds per hour shall increase to a maximum glass production rate of 4,000 pounds per hour. Natural gas shall be utilized in the combustion section of the forming chamber. The maximum heat input capacity of the combustion section has been included in an OAM confidential file. As fibers are formed, they are carried in the airstream towards a moving collection chain where they are captured. A binder is added to the bonded product which is transferred to a curing oven and the unbonded product is transferred directly to the shredding process. A water spray is applied to the airstream to control particulate matter emissions before the airstream is exhausted to Stack S2.

(b) Curing and Cooling Facilities:

(1) One (1) existing Line 3 natural gas-fired curing oven and cooling process for bonded product. The actual average glass production rate of 4,950 pounds per hour shall increase to a maximum glass production rate of 7,200 pounds per hour. During bonded production, particulate emissions in the airstream are controlled by a high efficiency air filter (HEAF) before the airstream is exhausted to Stack S3; and

(2) One (1) existing Line 6 natural gas-fired curing oven for bonded product. The actual average glass production rate of 1,600 pounds per hour shall increase to a maximum glass production rate of 4,000 pounds per hour. The particulate emissions in the airstream are controlled by a high efficiency air filter (HEAF) before the airstream is exhausted to Stack S2.

Emission Limitations and Standards:

D.3.1 Pollutant Emission Limitations

(a) Pursuant to 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules), each manufacturing line shall comply with the following limitations:

(1) Unbonded Product Limitations

Facility	Pollutant Limitations		
	PM/PM_{10} (lb/ton glass pulled)	VOC (lbs/hr)	CO (lbs/hr)
Line 2 Forming Process	3.70	6.78	21.0
Line 3 Forming Process	3.70	6.78	21.0
Line 6 Forming Process	3.70	3.77	25.3

(2) Bonded Product Limitations

Facility	Pollutant Limitations		
	PM/PM_{10} (lb/ton glass pulled)	VOC (lbs/hr)	CO (lbs/hr)
Line 3 Forming Process	2.19	18.6	21.0
Line 3 Curing Process	0.56	4.25	1.22
Line 3 Cooling Process	0.29	0.72	0.70
Line 6 Forming Process	7.84	8.66	25.3
Line 6 Curing Process	1.99	1.50	1.22

PM/PM_{10} means that the PM limit and the PM_{10} limit are the same and shall be measured as the sum of the filterable and condensible fractions. The particulate matter emissions established above demonstrate compliance with 40 CFR 60, Subpart PPP (New Source Performance Standards (NSPS) for Wool Fiberglass Insulation Manufacturing Plants).

(b) Pursuant to 326 IAC 6-1-14 (Nonattainment Area Particulate Limitations), the particulate matter (PM) emissions from each manufacturing line shall comply with the following limitations:

Facility	PM Emission Limitations	
	tons/yr	gr/dscf
Line 2 Forming Process	31.2	0.02
Line 2 Curing Process	0	---
Line 3 Forming Process	58.5	0.02
Line 3 Curing Process	19.5	0.02
Line 6 Forming Process	15.6	0.02
Line 6 Curing Process	4.0	0.02

(c) The particulate matter emissions established in (a) and (b) above shall supersede the following Operation Permit Conditions:

Facility	Operation Permit Condition
Line 2 Forming/Curing Process	Condition 5 of Operation Permit No. 89-02-88-0166, issued on April 2, 1984
Line 3 Forming/Curing Process	Condition 5 of Operation Permit No. 89-02-88-0167, issued on April 2, 1984

(d) In order to avoid the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration), each manufacturing line shall comply with the following limitations:

Facility	Pollutant Emission Limitations, lbs/hr	
	NOx	SO2
Line 2 Forming Process	2.03	0
Line 3 Forming Process	2.03	0
Line 3 Curing Process	1.51	0
Line 3 Cooling Process	0.46	0
Line 6 Forming Process	2.18	0
Line 6 Curing Process	0.84	0

(e) In order to avoid the requirements of 326 IAC 2-1-3.4 (New Source Toxics Control Rule), the hazardous air pollutant (HAP) emissions from manufacturing lines 2, 3, and 6 shall be less than 10 tons of a single HAP per year and less than 25 tons of combined HAPs per year.

D.3.2 Operation Standards

Pursuant to 326 IAC 2-2-3(a)(3), the forming, curing, and cooling processes shall comply with the following limitations:

(a) Line 2 Forming Process shall not exceed a glass production rate of unbonded product of 7,200 pounds per hour;

(b) Line 3 Forming, Curing, and Cooling Process shall not exceed a combined glass production rate of bonded and unbonded product of 7,200 pounds per hour; and

(c) Line 6 Forming and Curing Process shall not exceed a combined glass production rate of bonded and unbonded product of 4,000 pounds per hour.

(d) The production of unbonded product from each line shall be limited as follows to demonstrate compliance with the annual PM emission limitations required by Operation Condition D.3.1(b):

Facility	Unbonded Glass Production Limitation, tons/yr
Line 2 Forming Process	16,865
Line 3 Forming Process	31,622 [1]
Line 6 Forming Process	8,432 [2]

[1] For every ton of bonded product produced from Line 3, the above limitations shall be be reduced by 2.67 tons.

[2] For every ton of bonded product produced from Line 6, the above limitations shall be be reduced by 2.17 tons.

(e) The production of bonded product from Line 6 shall be limited to 6,240 tons per year, rolled on a monthly basis, to demonstrate compliance with the PM and VOC emission limitations required by Operation Condition D.3.1(b).

D.3.3 BACT Requirement

Pursuant to 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules), the Line 2 curing oven shall be permanently removed from service upon construction and operation of this permit modification.

Compliance Determination and Monitoring:

D.3.4 Performance Testing

(a) Pursuant to 326 IAC 2-1-3 (Construction and Operating Permit Requirements), the following compliance stack tests shall be performed within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up. Lines 3 and 6 shall be performed for both bonded and unbonded products:

Stack	Process	PM/PM_{10} [1]	NOx [2]	VOC	CO	HAP [3]
S2	Line 2 Forming - Unbonded	3.70 lb/ton 0.02 gr/dscf	2.03 lbs/hr	6.78 lb/hr	21.0 lb/hr	
S2	Line 6 Forming - Unbonded	3.70 lb/ton 0.02 gr/dscf	2.18 lbs/hr	3.77 lb/hr	25.3 lb/hr	
S2	Line 6 Forming/Curing - Bonded	9.83 lb/ton 0.02 gr/dscf	3.02 lbs/hr	10.2 lb/hr	26.5 lb/hr	2.28 lb/hr Single HAP; 5.71 lb/hr Combined HAP
S3	Line 3 Forming - Unbonded	3.70 lb/ton 0.02 gr/dscf	2.03 lbs/hr	6.78 lb/hr	21.0 lb/hr	
S3	Line 3 Forming/ Curing/Cooling - Bonded	3.04 lb/ton 0.02 gr/dscf	4.0 lbs/hr	23.6 lb/hr	22.9 lb/hr	2.28 lb/hr Single HAP; 5.71 lb/hr Combined HAP

[1] PM/PM_{10} means that the PM limit and the PM_{10} limit are the same. PM shall be measured in accordance with 40 CFR 60, Appendix A, Method 5. PM_{10} shall be measured in accordance with 40 CFR 51, Appendix M, Methods 201A and 202.

[2] The MMBtu per hour ratings of each combustion unit to be tested (Lines 2 and 3 Melt Furnaces and Lines 2, 3, and 6 Manufacturing Processes) shall be included in the test protocol.

[3] HAP Compliance Tests shall consist of formaldehyde and phenol. The compliance tests shall be performed during the production of bonded product for lines 3 and 6. Single HAP emissions from lines 3 and 6 shall not exceed 10 tons per year for a single HAP and 25 tons per year for combined HAPs to demonstrate compliance with Operation Condition No. D.3.1(e).

(b) All compliance tests shall be performed according to the provisions of 326 IAC 3-6 (Source Sampling Procedures), except as provided elsewhere in this permit (Construction Condition B.5), utilizing methods approved by IDEM, OAM.

(1) A test protocol shall be submitted to:

Indiana Department of Environmental Management
Office of Air Management - Compliance Data Section
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

at least thirty-five (35) days before the intended test date. The Permittee shall develop and submit with the protocol for approval by IDEM, OAM, standard operating procedures to be followed during sampling, handling, analysis, quality control, quality assurance, and data reporting.

(2) The Compliance Data Section shall be notified of the actual test date at least two (2) weeks prior to the date.

(3) All test reports must be received by the Compliance Data Section within 45 days of completion of the testing.

(4) When the results of a stack test performed exceed the level specified in any condition of this permit, the Permittee shall take appropriate corrective actions. The Permittee shall submit a description of these corrective actions to IDEM, OAM, within thirty (30) days of receipt of the test results. The Permittee shall take appropriate action to minimize emissions from the affected facility while the corrective actions are being implemented. IDEM, OAM shall notify the Permittee within thirty (30) days, if the corrective actions taken are deficient. The Permittee shall submit a description of additional corrective actions taken to IDEM, OAM within thirty (30) days of receipt of the notice of deficiency. IDEM, OAM reserves the authority to use enforcement activities to resolve noncompliant stack tests.

(5) Whenever the results of the stack test performed exceed the level specified in this permit, a second test to demonstrate compliance shall be performed within 120 days. Failure of the second test to demonstrate compliance may be grounds for immediate revocation of this permit to operate the affected facility.

(c) IDEM, OAM retains the authority under 326 IAC 2-1-4(f) to require the Permittee to perform additional and future compliance testing as necessary.

D.3.5 Visible Emission Notations

Visible emission notations of all exhaust to the atmosphere from stacks S2 and S3 shall be performed once per working shift (during daylight hours). A trained employee will record whether emissions are normal or abnormal.

(b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, 80% of the time the process is in operation, not counting start up or shut down time.

(c) In the case of batch or discontinuous operation, readings shall be taken during that part of the operation specified in the facility's specific condition prescribing visible emissions.

(d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal and abnormal visible emissions for that specific process.

(e) The Preventive Maintenance Plan for this facility shall contain troubleshooting contingency and corrective actions for when an abnormal emission is observed.

D.3.6 High Efficiency Air Filter (HEAF) Operating Condition

The HEAFs associated with the Line 3 curing and cooling process and the Line 6 curing process shall be operated at all times when its associated process is in operation.

(a) The Permittee shall monitor and record the total static pressure drop across the HEAF, at least once per day. The pressure drop across the HEAF shall be maintained within a pressure drop range of 1.0 and 7.0 inches of water. The pressure drop range may be adjusted to incorporate the pressure drop determined by a compliant stack test. If the water pressure falls outside of the determined range, corrective action shall be taken in accordance with the Permittee's Preventive Maintenance Plan. The company shall document the cause of the out-of-range reading and take immediate action to correct any problem. Failure or partial failure of the control device shall be reported to IDEM, OAM according to the procedure specified for malfunctions in 326 IAC 1-6-2, in which case the provisions of 326 IAC 1-6-5 may apply at the discretion of IDEM, OAM.

(b) The instrument used for determining the pressure shall be subject to approval by IDEM, OAM and shall be calibrated at least once every six (6) months.

(c) The gauge employed to take the pressure drop across the HEAF or any part of the facility shall have a scale such that the expected normal reading shall be no less than 20 percent of full scale and be accurate within $\pm$ 2 percent of full scale reading. The instrument shall be quality assured and maintained as specified by the vendor.

(d) An inspection of the HEAF shall be performed each calendar quarter. Defective media shall be replaced. A record shall be kept of the results of the inspection and the media replaced.

(e) In the event that a media failure has been observed and emissions temporarily exceed the standards:

(1) All reasonable measures shall be taken to correct, as expeditiously as practicable, the conditions causing the emissions to exceed the allowable limits;

(2) All possible steps shall be taken to minimize the impact of the excessive emissions on ambient air quality which may include but not limited to curtailment of operation and/or shutdown of the facility; and

(3) Failure or partial failure of the control device shall be reported to IDEM, OAM according to the procedure specified for malfunctions in 326 IAC 1-6-2, in which case the provisions of 326 IAC 1-6-5 may apply at the discretion of IDEM, OAM.

D.3.7 Water Spray Operating Condition

The water spray systems associated with the forming sections of the manufacturing lines shall be operated at all times when the forming sections are in operation.

D.3.8 Venturi Scrubber Operating Condition

The scrubber shall be constructed and operated prior to the manufacture of bonded product on Line 3. The scrubber shall be operated at all times when Line 3 is in operation for the production of bonded product.

(a) The Permittee shall monitor and record the pressure drop and flow rate of the scrubber, at least once per day. The Preventive Maintenance Plan for the scrubber shall contain troubleshooting contingency and corrective actions for when the acid content, pressure drop and flow rate readings are outside of the normal range for any one reading.

(b) The instruments used for determining the pressure drop and flow rate shall be subject to approval by IDEM, OAM, and shall be calibrated at least once every six (6) months.

(c) The gauge employed to take the pressure drop across the scrubber or any part of the facility shall have a scale such that the expected normal reading shall be no less than 20 percent of full scale and be accurate within $\pm$ 2% of full scale reading. The instrument shall be quality assured and maintained as specified by the vendor.

(d) An inspection of the scrubber shall be performed each calendar quarter. Defective scrubber part(s) shall be replaced. A record shall be kept of the results of the inspection and the number of scrubber part(s) replaced.

(e) In the event of scrubber failure has been observed and emissions temporarily exceed the standards:

(1) All reasonable measures shall be taken to correct, as expeditiously as practicable, the conditions causing the emissions to exceed the allowable limits;

(2) All possible steps shall be taken to minimize the impact of the excessive emissions on ambient air quality which may include but not limited to curtailment of operation and/or shutdown of the facility; and

(3) Failure or partial failure of the control device shall be reported to IDEM, OAM according to the procedure specified for malfunctions in 326 IAC 1-6-2, in which case the provisions of 326 IAC 1-6-5 may apply at the discretion of IDEM, OAM.

Recordkeeping and Reporting Requirements:

D.3.9 Recordkeeping Requirement

(a) The Permittee shall maintain the following records:

(1) visible emission notations required by Operation Condition D.3.5 shall be performed once per working shift (during daylight hours) to demonstrate compliance with the PM emission limitations required by Operation Condition D.3.1; and

(2) daily logs of the parameters established in Operation Condition D.3.6(a), semi-annual logs of the parameters established in Operation Condition D.3.6(b) and quarterly logs of the parameters established in Operation Condition D.3.6(d) shall be performed to demonstrate compliance with the PM emission limitations for lines 3 and 6 curing ovens and cooling processes required by Operation Condition D.3.1.

(3) daily logs of the parameters established in Operation Condition D.3.8(a) semi-annual logs of the parameters established in Operation Condition D.3.8(b) and quarterly logs of the parameters established in Operation Condition D.3.8(d) shall be performed to demonstrate compliance with the PM emission limitation for the production of bonded product on manufacturing line 3 required by Operation Condition D.3.1.

(b) Records shall be retained for a minimum period of five (5) years. Records of the previous three (3) years shall be kept at the source location and be made available within one (1) hour upon verbal request of an IDEM, OAM, representative. Records of the remaining two (2) years may be stored elsewhere provided they be made available to the OAM within thirty (30) days after written request.

(c) Records of required monitoring information shall include, where applicable:

(1) the date, place, and time of sampling or measurements;

(2) the dates analyses were performed;

(3) the company or entity performing the analyses;

(4) the analytic techniques or methods used;

(5) the results of such analyses; and

(6) the operating conditions existing at the time of sampling or measurement.

(d) Support information shall include, where applicable:

(1) copies of all reports required by this permit;

(2) all original strip chart recordings for continuous monitoring instrumentation;

(3) all calibration and maintenance records; and

(4) records of any required preventive maintenance and corrective actions that were implemented. Such records shall briefly describe what was done and indicate who did it. Such records may include, but are not limited to work orders, quality assurance procedures, quality control procedures, operator's standard operating procedures, manufacturer's specifications or their equivalent, and equipment "troubleshooting" guidance.

(e) All record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance.

SECTION D.4 FACILITY OPERATION CONDITIONS FOR THE SHREDDING AND PACKAGING AREAS

(a) The following shredding and packaging processes for Lines 2, 3, and 6 shall increase its hours of operational use to achieve maximum production capacity:

(1) One (1) existing Line 2 shredding process. The shredded fiber is pneumatically transferred to the packaging area. During the shredding process an anti-static agent and oil are applied to the product and any particulate emissions in the airstream are controlled by two baghouses before the airstream is exhausted to Stacks S85 and S86;

(2) One (1) existing Line 2 packaging area. The airstream is separated from the unbonded shredded product via a cyclone. Fiberglass collected in the cyclones is deposited in the packaging hopper and subsequently packaged for sale. The particulate emissions in the cyclone airstream are controlled by two (2) baghouses before the airstream is exhausted to Stacks S85 and S86;

(3) One (1) existing Line 3 shredding process for unbonded product. The shredded fiber is pneumatically transferred to the packaging area. During the shredding process an anti-static agent and oil are applied to the product and any particulate emissions in the airstream are controlled by two baghouses before the airstream is exhausted to Stacks S12 and S13;

(4) One (1) existing Line 3 packaging area for unbonded and bonded product. The airstream is separated from the unbonded shredded product via a cyclone. Fiber glass collected in the cyclone is deposited in the packaging hopper and subsequently packaged for sale. The particulate matter emissions in the cyclone airstream are controlled by two (2) baghouses before the airstream is exhausted to Stacks S12 and S13. The bonded product from Line 3 is trimmed and packaged and generates negligible particulate emissions that are uncontrolled;

(5) One (1) existing Line 6 shredding process for unbonded and bonded product. The shredded fiber is then pneumatically transferred to the packaging area. During the shredding process an anti-static agent and oil are applied to the product and any particulate emissions in the airstream are controlled by a baghouse before the airstream is exhausted to Stack S11; and

(6) One (1) existing Line 6 packaging area for unbonded and bonded product. The airstream is separated from the unbonded shredded product via a cyclone. Fiber glass collected in the cyclone is deposited in the packaging hopper and subsequently packaged for sale. The particulate emissions in the cyclone airstream are controlled by a baghouse before being exhausted to Stack S11. The bonded product from Line 6 may also be trimmed and packaged. This operation generates negligible particulate matter emissions that are uncontrolled.

Emission Limitations and Standards:

D.4.1 Particulate Matter Emission Limitations

Pursuant to 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules), each shredding and packaging area shall comply with the following limitations:

Facility	Facility Stack	PM/PM_{10} Emission Limitations, lb/ton glass pulled
Line 2 Shredding and Packaging	S85	0.26
Line 2 Shredding and Packaging	S86	0.26
Line 3 Shredding and Packaging	S12	0.29
Line 3 Shredding and Packaging	S13	0.57
Line 6 Shredding and Packaging	S11	0.65

PM/PM_{10} means that the PM limit and the PM_{10} limit are the same and shall be measured as the sum of the filterable and condensible fractions.

D.4.2 Operation Standards

Pursuant to 326 IAC 2-2-3(a)(3), the furnaces shall comply with the following limitations:

(a) Line 2 Shredding and Packaging Process shall not exceed a glass production rate of 7,200 pounds per hour;

(b) Line 3 Shredding and Packaging Process shall not exceed a glass production rate of 7,200 pounds per hour; and

(c) Line 6 Shredding and Packaging Process shall not exceed a glass production rate of 4,000 pounds per hour.

Compliance Determination and Monitoring:

D.4.3 Performance Testing

(a) Pursuant to 326 IAC 2-1-3 (Construction and Operating Permit Requirements), the following compliance stack tests shall be performed within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up:

Stack	Process	PM/PM_{10} [1]
S11	Line 6	0.65 lb/ton
S12	Line 3	0.29 lb/ton
S13	Line 3	0.57 lb/ton
S85	Line 2	0.26 lb/ton
S86	Line 2	0.26 lb/ton

[1] PM/PM_{10} means that the PM limit and the PM_{10} limit are the same. PM shall be measured in accordance with 40 CFR 60, Appendix A, Method 5. PM_{10} shall be measured in accordance with 40 CFR 51, Appendix M, Methods 201A and 202.

(b) All compliance tests shall be performed according to the provisions of 326 IAC 3-6 (Source Sampling Procedures), except as provided elsewhere in this permit (Construction Condition B.5), utilizing methods approved by IDEM, OAM.

(1) A test protocol shall be submitted to:

Indiana Department of Environmental Management
Office of Air Management - Compliance Data Section
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

at least thirty-five (35) days before the intended test date. The Permittee shall develop and submit with the protocol for approval by IDEM, OAM, standard operating procedures to be followed during sampling, handling, analysis, quality control, quality assurance, and data reporting.

(2) The Compliance Data Section shall be notified of the actual test date at least two (2) weeks prior to the date.

(3) All test reports must be received by the Compliance Data Section within 45 days of completion of the testing.

(4) When the results of a stack test performed exceed the level specified in any condition of this permit, the Permittee shall take appropriate corrective actions. The Permittee shall submit a description of these corrective actions to IDEM, OAM, within thirty (30) days of receipt of the test results. The Permittee shall take appropriate action to minimize emissions from the affected facility while the corrective actions are being implemented. IDEM, OAM shall notify the Permittee within thirty (30) days, if the corrective actions taken are deficient. The Permittee shall submit a description of additional corrective actions taken to IDEM, OAM within thirty (30) days of receipt of the notice of deficiency. IDEM, OAM reserves the authority to use enforcement activities to resolve noncompliant stack tests.

(5) Whenever the results of the stack test performed exceed the level specified in this permit, a second test to demonstrate compliance shall be performed within 120 days. Failure of the second test to demonstrate compliance may be grounds for immediate revocation of this permit to operate the affected facility.

(c) IDEM, OAM retains the authority under 326 IAC 2-1-4(f) to require the Permittee to perform additional and future compliance testing as necessary.

D.4.4 Visible Emission Notations

Visible emission notations of all exhaust to the atmosphere from stacks S11, S12, S13, S85 and S86 associated with the shredding and packaging area baghouse systems shall be performed once per working shift (during daylight hours). A trained employee will record whether emissions are normal or abnormal.

(a) For processes operated continuously, “normal” means those conditions prevailing, or expected to prevail, 80% of the time the process is in operation, not counting start up or shut down time.

(b) In the case of batch or discontinuous operation, readings shall be taken during that part of the operation specified in the facility’s specific condition prescribing visible emissions.

(c) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal and abnormal visible emissions for that specific process.

(d) The Preventive Maintenance Plan for this facility shall contain troubleshooting contingency and corrective actions for when an abnormal emission is observed.

D.4.5 Baghouse Operating Condition

The baghouse systems associated with the shredding and packaging areas shall be operated at all times when its associated process is in operation.

(a) The Permittee shall monitor and record the total static pressure drop across each of the baghouses, at least once per day. The pressure drop across each of the baghouses shall be maintained within a pressure drop range of 1.0 to 7.0 inches of water. The pressure drop range may be adjusted to incorporate the pressure drop determined by a compliant stack test. If the water pressure falls outside of the determined range, corrective action shall be taken in accordance with the Permittee's Preventive Maintenance Plan. The company shall document the cause of the out-of-range reading and take immediate action to correct any problem. Failure or partial failure of the control device shall be reported to IDEM, OAM according to the procedure specified for malfunctions in 326 IAC 1-6-2, in which case the provisions of 326 IAC 1-6-5 may apply at the discretion of IDEM, OAM.

(b) The instrument used for determining the pressure shall be subject to approval by IDEM, OAM and shall be calibrated at least once every six (6) months.

(c) The gauge employed to take the pressure drop across the baghouse or any part of the facility shall have a scale such that the expected normal reading shall be no less than 20 percent of full scale and be accurate within $\pm$ 2 percent of full scale reading. The instrument shall be quality assured and maintained as specified by the vendor.

(d) An inspection of the baghouse shall be performed each calendar quarter. Defective bags shall be replaced. A record shall be kept of the results of the inspection and the number of bags replaced.

(e) In the event that a bag’s failure has been observed and emissions temporarily exceed the standards:

(1) All reasonable measures shall be taken to correct, as expeditiously as practicable, the conditions causing the emissions to exceed the allowable limits;

(2) All possible steps shall be taken to minimize the impact of the excessive emissions on ambient air quality which may include but not limited to curtailment of operation and/or shutdown of the facility; and

(3) Failure or partial failure of the control device shall be reported to IDEM, OAM according to the procedure specified for malfunctions in 326 IAC 1-6-2, in which case the provisions of 326 IAC 1-6-5 may apply at the discretion of IDEM, OAM.

Recordkeeping and Reporting Requirements:

D.4.6 Recordkeeping Requirement

(a) The Permittee shall maintain the following records:

(1) visible emission notations required by Operation Condition D.4.4 shall be performed once per working shift (during daylight hours) to demonstrate compliance with the PM emission limitations required by Operation Condition D.4.1; and

(2) daily logs of the parameters established in Operation Condition D.4.5(a), semi-annual logs of the parameters established in Operation Condition D.4.5(b) and quarterly logs of the parameters established in Operation Condition D.4.5(d) shall be performed to demonstrate compliance with the PM emission limitations required by Operation Condition D.4.1.

(b) Records shall be retained for a minimum period of five (5) years. Records of the previous three (3) years shall be kept at the source location and be made available within one (1) hour upon verbal request of an IDEM, OAM, representative. Records of the remaining two (2) years may be stored elsewhere provided they be made available to the OAM within thirty (30) days after written request.

(c) Records of required monitoring information shall include, where applicable:

(1) the date, place, and time of sampling or measurements;

(2) the dates analyses were performed;

(3) the company or entity performing the analyses;

(4) the analytic techniques or methods used;

(5) the results of such analyses; and

(6) the operating conditions existing at the time of sampling or measurement.

(d) Support information shall include, where applicable:

(1) copies of all reports required by this permit;

(2) all original strip chart recordings for continuous monitoring instrumentation;

(3) all calibration and maintenance records; and

(4) records of any required preventive maintenance and corrective actions that were implemented. Such records shall briefly describe what was done and indicate who did it. Such records may include, but are not limited to work orders, quality assurance procedures, quality control procedures, operator's standard operating procedures, manufacturer's specifications or their equivalent, and equipment "troubleshooting" guidance.

(e) All record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance.

SECTION D.5 FACILITY OPERATION CONDITIONS FOR THE ANCILLARY EQUIPMENT

(a) Ancillary Equipment:

(1) One (1) existing EP dust recycling fan that is exhausted to stack S34;

(2) One (1) existing cold end housekeeping system. The particulate emissions in the airstream are controlled by a baghouse before the airstream is exhausted to stack S10; and

(3) One (1) existing natural gas-fired boiler with a rated capacity of 25 MMBtu per hour and the capability to utilize propane as a backup fuel. The airstream from the boiler is exhausted to stack S4.

Emission Limitations and Standards:

D.5.1 Pollutant Emission Limitations

(a) Pursuant to 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration Rules), the ancillary equipment shall comply with the following particulate matter limitations:

(1) the particulate emissions from stack S34 from the EP recycling fan shall not exceed an average of three percent (3%) opacity in any 24 consecutive readings recorded in 15 second intervals in accordance with the applicable requirements of 40 CFR 60, Appendix A, Method 9;

(2) the cold end housekeeping system shall be equipped with a baghouse system and shall not exceed an average of three percent (3%) opacity in any 24 consecutive readings recorded in 15 second intervals in accordance with the applicable requirements of 40 CFR 60, Appendix A, Method 9; and

(3) the natural gas-fired boiler shall not exceed 0.34 pounds per hour and 0.0137 pounds per million Btu. The boiler shall also be limited to 1.0 tons per year to demonstrate compliance with the requirements of 326 IAC 6-1-14.

(b) Pursuant to 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules), the ancillary equipment shall comply with the following limitations:

Facility	Pollutant Limitations, lbs/hr		
	PM/PM_{10}	VOC	CO
EP Dust Recycling Fan	0.19	0	0
Cold End Housekeeping System	0.51	0	0
Natural Gas-fired Boiler	0.34	0.07	0.875

PM/PM_{10} means that the PM limit and the PM_{10} limit are the same and shall be measured as the sum of the filterable and condensible fractions.

(c) In order to avoid the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration), the ancillary equipment shall comply with the following limitations:

Facility	Pollutant Emission Limitations, lbs/hr	
	NOx	SO2
EP Dust Recycling Fan	0	0
Cold End Housekeeping System	0	0
Natural Gas-fired Boiler	3.5	0.015

Compliance Determination and Monitoring:

D.5.2 Baghouse Operating Condition

The baghouse system associated with the cold end housekeeping system shall be operated at all times when its associated process is in operation.

(a) The Permittee shall monitor and record the total static pressure drop across each of the baghouses, at least once per day. The pressure drop across each of the baghouses shall be maintained within a pressure drop range of 1.0 to 7.0 inches of water. The pressure drop range may be adjusted to incorporate the pressure drop determined by a compliant stack test. If the water pressure falls outside of the determined range, corrective action shall be taken in accordance with the Permittee's Preventive Maintenance Plan. The company shall document the cause of the out-of-range reading and take immediate action to correct any problem. Failure or partial failure of the control device shall be reported to IDEM, OAM according to the procedure specified for malfunctions in 326 IAC 1-6-2, in which case the provisions of 326 IAC 1-6-5 may apply at the discretion of IDEM, OAM.

(b) The instrument used for determining the pressure shall be subject to approval by IDEM, OAM and shall be calibrated at least once every six (6) months.

(c) The gauge employed to take the pressure drop across the baghouse or any part of the facility shall have a scale such that the expected normal reading shall be no less than 20 percent of full scale and be accurate within $\pm$ 2 percent of full scale reading. The instrument shall be quality assured and maintained as specified by the vendor.

(d) An inspection of the baghouse shall be performed each calendar quarter. Defective bags shall be replaced. A record shall be kept of the results of the inspection and the number of bags replaced.

(e) In the event that a bag's failure has been observed and emissions temporarily exceed the standards:

(1) All reasonable measures shall be taken to correct, as expeditiously as practicable, the conditions causing the emissions to exceed the allowable limits;

(2) All possible steps shall be taken to minimize the impact of the excessive emissions on ambient air quality which may include but not limited to curtailment of operation and/or shutdown of the facility; and

(3) Failure or partial failure of the control device shall be reported to IDEM, OAM according to the procedure specified for malfunctions in 326 IAC 1-6-2, in which case the provisions of 326 IAC 1-6-5 may apply at the discretion of IDEM, OAM.

Recordkeeping and Reporting Requirements:

D.5.3 Recordkeeping Requirement

(a) The Permittee shall maintain the following records:

(1) monthly fuel usage log to document compliance with the annual PM emission limitation required by Operation Condition D.5.1(a)(3); and

(2) daily logs of the parameters established in Operation Condition D.5.2(a), semi-annual logs of the parameters established in Operation Condition D.5.2(b) and quarterly logs of the parameters established in Operation Condition D.5.2(d) shall be performed to demonstrate compliance with the PM emission limitations required by Operation Condition D.5.1(b).

(b) Records shall be retained for a minimum period of five (5) years. Records of the previous three (3) years shall be kept at the source location and be made available within one (1) hour upon verbal request of an IDEM, OAM, representative. Records of the remaining two (2) years may be stored elsewhere provided they be made available to the OAM within thirty (30) days after written request.

(c) Records of required monitoring information shall include, where applicable:

(1) the date, place, and time of sampling or measurements;

(2) the dates analyses were performed;

(3) the company or entity performing the analyses;

(4) the analytic techniques or methods used;

(5) the results of such analyses; and

(6) the operating conditions existing at the time of sampling or measurement.

(d) Support information shall include, where applicable:

(1) copies of all reports required by this permit;

(2) all original strip chart recordings for continuous monitoring instrumentation;

(3) all calibration and maintenance records; and

(4) records of any required preventive maintenance and corrective actions that were implemented. Such records shall briefly describe what was done and indicate who did it. Such records may include, but are not limited to work orders, quality assurance procedures, quality control procedures, operator's standard operating procedures, manufacturer's specifications or their equivalent, and equipment "troubleshooting" guidance.

(e) All record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance.

SECTION D.6 FACILITY OPERATION CONDITIONS FOR THE STANDBY DIESEL GENERATORS

(g) Two (2) new standby diesel generators, rated at 635 hp and 700 hp, exhausting to stacks S162 and S163, respectively. These generators shall replace three (3) existing generators, each rated at 155 hp.

Emission Limitations and Standards:

D.6.1 Pollutant Emission Limitations

(a) Pursuant to 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules), each manufacturing line shall comply with the following limitations:

Facility	Pollutant Emission Limitations					
	PM/PM_{10}		VOC		CO	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Standby Diesel Generator, 635 hp	0.204	0.031	0.448	0.067	3.49	0.524
Standby Diesel Generator, 700 hp	0.276	0.041	0.494	0.074	3.85	0.578

PM/PM_{10} means that the PM limit and the PM_{10} limit are the same and shall be measured as the sum of the filterable and condensible fractions.

(b) In order to avoid the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration), each manufacturing line shall comply with the following limitations:

Facility	Pollutant Emission Limitations			
	NOx		SO2	
	lb/hr	ton/yr	lb/hr	ton/yr
Standby Diesel Generator, 635 hp	15.2	2.28	10.3	1.55
Standby Diesel Generator, 700 hp	16.8	2.52	11.3	1.70

D.6.2 Production Limitations

The annual fuel usage from the standby diesel generators, determined on a twelve (12) consecutive month period, shall be limited as follows to demonstrate compliance with the annual emission limitations required by Operation Condition D.6.1:

Facility	Annual Fuel Usage Limitations, gallons / 12 consecutive month period
Standby Diesel Generator, 635 hp	7,800
Standby Diesel Generator, 700 hp	10,500

D.6.3 BACT Requirement

Pursuant to 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules), the three (3) existing standby generators, each rated at 155 hp, shall be permanently removed from service upon construction and operation of the generators described in this permit.

Recordkeeping and Reporting Requirements:

D.6.4 Recordkeeping Requirement

(a) The Permittee shall maintain monthly fuel usage log to document compliance with the annual PM emission limitation required by Operation Condition D.6.2.

(b) Records shall be retained for a minimum period of five (5) years. Records of the previous three (3) years shall be kept at the source location and be made available within one (1) hour upon verbal request of an IDEM, OAM, representative. Records of the remaining two (2) years may be stored elsewhere provided they be made available to the OAM within thirty (30) days after written request.

(c) Records of required monitoring information shall include, where applicable:

(1) the date, place, and time of sampling or measurements;

(2) the dates analyses were performed;

(3) the company or entity performing the analyses;

(4) the analytic techniques or methods used;

(5) the results of such analyses; and

(6) the operating conditions existing at the time of sampling or measurement.

(d) Support information shall include, where applicable:

(1) copies of all reports required by this permit;

(2) all original strip chart recordings for continuous monitoring instrumentation;

(3) all calibration and maintenance records; and

(4) records of any required preventive maintenance and corrective actions that were implemented. Such records shall briefly describe what was done and indicate who did it. Such records may include, but are not limited to work orders, quality assurance procedures, quality control procedures, operator's standard operating procedures, manufacturer's specifications or their equivalent, and equipment "troubleshooting" guidance.

(e) All record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance.

MALFUNCTION REPORT

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR MANAGEMENT
FAX NUMBER - 317 233-5967

This form should only be used to report malfunctions applicable to Rule 326 IAC 1-6 and to qualify for the exemption under 326 IAC 1-6-4.

THIS FACILITY MEETS THE APPLICABILITY REQUIREMENTS BECAUSE: IT HAS POTENTIAL TO EMIT 25 LBS/HR PARTICULATES ?_____, 100 LBS/HR VOC ?_____, 100 LBS/HR SULFUR DIOXIDE ?_____ OR 2000 LBS/HR OF ANY OTHER POLLUTANT ?_____ EMISSIONS FROM MALFUNCTIONING CONTROL EQUIPMENT OR PROCESS EQUIPMENT CAUSED EMISSIONS IN EXCESS OF APPLICABLE LIMITATION _____.

THIS MALFUNCTION RESULTED IN A VIOLATION OF: 326 IAC _____ OR, PERMIT CONDITION # _____ AND/OR PERMIT LIMIT OF _____

THIS INCIDENT MEETS THE DEFINITION OF 'MALFUNCTION' AS LISTED ON REVERSE SIDE ? Y N

THIS MALFUNCTION IS OR WILL BE LONGER THAN THE ONE (1) HOUR REPORTING REQUIREMENT ? Y N

COMPANY:_____PHONE NO. ( )_____
LOCATION: (CITY AND COUNTY)_____
PERMIT NO. _____ AFS PLANT ID: _____ AFS POINT ID: _____ INSP: _____
CONTROL/PROCESS DEVICE WHICH MALFUNCTIONED AND REASON:_____
_____

DATE/TIME MALFUNCTION STARTED: _____/_____/ 19____ _____ AM / PM

ESTIMATED HOURS OF OPERATION WITH MALFUNCTION CONDITION: _____

DATE/TIME CONTROL EQUIPMENT BACK-IN SERVICE_____/_____/ 19____ _____ AM/PM

TYPE OF POLLUTANTS EMITTED: TSP, PM-10, SO2, VOC, OTHER: _____

ESTIMATED AMOUNT OF POLLUTANT EMITTED DURING MALFUNCTION: _____
_____

MEASURES TAKEN TO MINIMIZE EMISSIONS:_____
_____

REASONS WHY FACILITY CANNOT BE SHUTDOWN DURING REPAIRS:

CONTINUED OPERATION REQUIRED TO PROVIDE ESSENTIAL*SERVICES:_____
CONTINUED OPERATION NECESSARY TO PREVENT INJURY TO PERSONS:_____
CONTINUED OPERATION NECESSARY TO PREVENT SEVERE DAMAGE TO EQUIPMENT:_____
INTERIM CONTROL MEASURES: (IF APPLICABLE)_____
MALFUNCTION REPORTED BY: _____TITLE:_____
(SIGNATURE IF FAXED)
MALFUNCTION RECORDED BY:_____DATE:_____TIME:_____

REV 3/96 FAX NUMBER - 317 233-5967 *SEE REVERSE

Please note - This form should only be used to report malfunctions applicable to Rule 326 IAC 1-6 and to qualify for the exemption under 326 IAC 1-6-4.

326 IAC 1-6-1 Applicability of rule

Sec. 1. The requirements of this rule (326 IAC 1-6) shall apply to the owner or operator of any facility which has the potential to emit twenty-five (25) pounds per hour of particulates, one hundred (100) pounds per hour of volatile organic compounds or SO2, or two thousand (2,000) pounds per hour of any other pollutant; or to the owner or operator of any facility with emission control equipment which suffers a malfunction that causes emissions in excess of the applicable limitation.

326 IAC 1-2-39 "Malfunction" definition

Sec. 39. Any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. (Air Pollution Control Board; 326 IAC 1-2-39; filed Mar 10, 1988, 1:20 p.m. : 11 IR 2373)

***Essential services** are interpreted to mean those operations, such as, the providing of electricity by power plants. Continued operation solely for the economic benefit of the owner or operator shall not be sufficient reason why a facility cannot be shutdown during a control equipment shutdown.

If this item is checked on the front, please explain rationale:

_____

_____

Indiana Department of Environmental Management
Office of Air Management
Compliance Data Section
Quarterly Report

Company Name: Johns Manville International, Inc.
Location: 814 Richmond Avenue, Richmond, Indiana 47374
Permit No.: CP 177-5873-00006
Source/Facility: Lines 2, 3, and 6 Production Processes
Limits: Production Limits Required by Operation Condition D.3.2(d) and (e)

YEAR: _______________

Month	Production Facility	Production this Month, tons	Production Last 12 Months, tons	Production Limit, tons/12 consecutive months
	Line 2 Unbonded			16,865
	Line 3 Unbonded			31,622
	Line 3 Bonded [1]			
	Line 6 Unbonded			8,432
	Line 6 Bonded [2, 3]			
	Line 2 Unbonded			16,865
	Line 3 Unbonded			31,622
	Line 3 Bonded [1]			
	Line 6 Unbonded			8,432
	Line 6 Bonded [2, 3]			
	Line 2 Unbonded			16,865
	Line 3 Unbonded			31,622
	Line 3 Bonded [1]			
	Line 6 Unbonded			8,432
	Line 6 Bonded [2, 3]			

[1] For every ton of bonded product produced from Line 3, the above limitations shall be be reduced by 2.67 tons

[2] For every ton of bonded product produced from Line 6, the above limitations shall be be reduced by 2.17 tons

[3] The production of bonded product from Line 6 shall be limited to 6,240 tons per year, rolled on a monthly basis

☐ I certify that none of the hourly production limits established in Operation Conditions D.2.2, D.3.2, and D.4.2 of CP 177-5873 were exceeded this quarter.

Submitted by: ______________________________ Date:_____________________________________

Title / Position: ______________________________ Signature:________________________________

Indiana Department of Environmental Management
Office of Air Manage1ment
Compliance Data Section
Quarterly Report

Company Name: Johns Manville International, Inc.
Location: 814 Richmond Avenue, Richmond, Indiana 47374
Permit No.: CP 177-5873-00006
Source/Facility: Standby Diesel Generators
Limits: Fuel Usage Limits Required by Operation Condition D.6.2

YEAR: _____

Month	Production Facility	Fuel Usage this Month, gallons	Fuel Usage Last 12 Months, gallons	Fuel Usage Limit, gallons/ 12 consecutive month period
	Standby Diesel Generator, 635 hp			7,800
	Standby Diesel Generator, 700 hp			10,500
	Standby Diesel Generator, 635 hp			7,800
	Standby Diesel Generator, 700 hp			10,500
	Standby Diesel Generator, 635 hp			7,800
	Standby Diesel Generator, 700 hp			10,500

Submitted by: _____

Title / Position: _____

Signature: _____

Date: _____

Phone: _____

Indiana Department of Environmental Management
Office of Air Management

Technical Support Document (TSD) for New Construction and Operation

Source Background and Description

Source Name:	Johns Manville International, Inc.
Source Location:	814 Richmond Avenue, Richmond, Indiana 47374
County:	Wayne
Construction Permit No.:	CP-177-5873-00006
SIC Code:	3296
Permit Reviewer:	Michele Williams

The Office of Air Management (OAM) has reviewed an application from Johns Manville International, relating to changes in the forming processes of Lines 2, 3, and 6 to manufacture a more consistent wool fiberglass product and an increase the production capacities of the existing manufacturing lines. The detailed description of equipment can be found in the proposed construction permit.

Stack Summary

Stack ID	Operation	Height (meters)	Diameter (meters)	Flow Rate (acfm)	Temperature (^{0}F)
S2	Line 2 Forming & Line 6 Forming, Curing, and Cooling	60.0	4.19	191,479	109.5
S3	Line 3 Forming, Curing, and Cooling	55.1	2.44	115,906	162.2
S4	Boiler	13.2	0.70	2,039	242.3
S5	Line 2 & 3 Melt Furnaces	21.6	1.07	35,098	371.6
S7	Line 6 Electric Melter	7.7	0.64	15,000	121.7
S10	Cold end housekeeping System	15.2	0.49	6,000	49.7
S11	Line 6 Loose Fill Pack System	15.2	0.77	15,000	49.7
S12	Line 3 Loose Fill Pack System	15.2	0.69	12,000	49.7
S13	Line 3 Loose Fill Pack System	16.8	0.97	24,000	49.7
S21	Raw Material Batch Silo No. 1	28.0	3.01	6.02	ambient
S22	Raw Material Batch Silo No. 2	28.4	3.01	6.02	ambient
S23	Raw Material Batch Silo No. 3	28.0	3.01	6.02	ambient
S24	Raw Material Batch Silo No. 4	28.2	3.01	6.02	ambient
S25	Raw Material Batch Silo No. 5	28.0	3.01	6.02	ambient
S26	Raw Material Batch Silo No. 6	28.3	3.01	6.02	ambient
S27	Raw Material Batch Silo No. 7	28.1	3.01	6.02	ambient
S28	Raw Material Batch Silo No. 8	30.7	3.01	6.02	ambient
S31	Daybin 2N	22.2	3.01	6.02	ambient
S32	Daybin 3W	22.2	3.01	6.02	ambient
S33	Daybin 3E	22.2	3.01	6.02	ambient

S34	EP Dust Recycling Fan	17.2	9.90	27.3	ambient
S85	Line 2 Loose Fill Pack System	15.2	0.66	11,000	49.7
S86	Line 2 Loose Fill Pack System	15.2	0.66	11,000	49.7
S162	Standby Diesel Generator	9.5	0.25	43,000	700
S163	Standby Diesel Generator	9.5	0.25	43,000	700
F001	Rail Unloading	4.5	9.00	9	ambient

Enforcement Issue

IDEM is aware that the Line 2 Forming Section (unbonded), Line 3 Forming Section (bonded), and Line 6 Electric Melter have operated outside of the PM10 emission limitations required by 326 IAC 6-1-14. IDEM is reviewing this matter and will take appropriate action. This proposed permit is intended to satisfy the requirements of the construction permit rules.

Recommendation

The staff recommends to the Commissioner that the construction and operation be approved. Information, unless otherwise stated, used in this review was derived from the application received on May 15, 1996 and additional information submitted on November 19, 1996 through July 21, 1998.

Emissions Calculations

The emission calculations contain confidential information regarding the raw material input and process design of the fiberglass operation. Therefore, this information has not been included for public review. The OAM has reviewed and accepted the emission calculations and the appropriate emission limitations have been provided in the proposed construction permit operation conditions.

Total Allowable Emissions

The following table represents the total allowable emissions as defined in 326 IAC 1-2-2 for the source. These emissions are determined after compliance with applicable rules (326 IAC 2-2 and 326 IAC 12), based on 8,760 hours of operation per year at rated capacity.

Pollutant	Allowable Emissions (tons/year)
Particulate Matter (PM)	308
Particulate Matter (PM10)	308
Sulfur Dioxide (SO_2)	5.5
Volatile Organic Compounds (VOC)	175
Carbon Monoxide (CO)	344
Nitrogen Oxides (NO_x)	72
Lead (Pb)	0.015
Single Hazardous Air Pollutant (HAP) (formaldehyde)	12.6
Combination of HAPs (formaldehyde + phenol)	22.9

(a) Allowable emissions are based on the total emissions from the existing processes including the modification, not just the modification itself.

(b) Allowable emissions (as defined in the Indiana Rule) of at least one criteria pollutant are greater than 25 tons per year. Therefore, pursuant to 326 IAC 2-1, Sections 1 and 3, a construction permit is required.

County Attainment Status

Volatile organic compounds (VOC) are precursors for the formation of ozone. Therefore, VOC emissions are considered when evaluating rule applicability relating to the ozone standards. Wayne County has been designated as attainment or unclassifiable for ozone. Therefore, VOC emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

Wayne County has been classified as attainment or unclassifiable for all other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

Source Status

The following emissions summary table represents the existing source emissions after controls:

Pollutant	Emissions, tons/yr
PM	139
PM10	139
SO_2	1.5
VOC	91
CO	156
NO_x	38

(a) This existing source is a major PSD source as defined in 326 IAC 2-2-1 (Major PSD Source) because it is in one of the 28 listed source categories (Glass Fiber Processing Plants) and at least one regulated pollutant is emitted at a rate of 100 tons per year or more.

(b) The existing source emissions are based on the average 1996 and 1997 emission statement data provided by Johns Manville.

Proposed Modification

The following table represents the potential to emit (PTE) from the proposed modification after controls based on 8,760 hours of operation per year at rated capacity.

Pollutant	PM (ton/yr)	PM10 (ton/yr)	SO_2 (ton/yr)	VOC (ton/yr)	CO (ton/yr)	NO_x (ton/yr)
Proposed Total Source Emissions	308	308	5.5	175	344	72
Existing Source Emissions	139	139	1.5	91	156	38
Net Emissions	169	169	4.0	84	188	34
PSD Significant Level	25	15	40	40	100	40

(a) This modification to an existing major stationary source is subject to the requirements of 326 IAC 2-2 and 40 CFR 52.21 for PM, PM_{10}, VOC, and CO because the net emissions from the modification exceed the PSD significant threshold levels.

(b) The existing source emissions are based on the average 1996 and 1997 emission statement data provided by Johns Manville.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)
This existing source submitted its Part 70 permit application (T-177-7720-00006) on December 13, 1996. The equipment being reviewed under this proposed permit shall be incorporated in the submitted Part 70 permit application.

Federal Rule Applicability

40 CFR 63 (National Emissions Standards for Hazardous Air Pollutants)
There are presently no National Emissions Standards for Hazardous Air Pollutant (NESHAP) regulations for wool fiberglass insulation manufacturing plants. However, there is a proposed NESHAP rule for Wool Fiberglass Manufacturing (40 CFR 60, Subpart FFF) that applies to existing and newly constructed glass melting furnaces, RS manufacturing lines, and FA manufacturing lines. The hazardous air pollutants (HAPs) emitted by the facilities covered by this proposed rule include three metals (arsenic, chromium, lead) and three organic HAPs (formaldehyde, phenol, and methanol). PM serves as a surrogate for HAP metals and formaldehyde serves as a surrogate for organic HAPs. The proposed NESHAP will apply to the existing glass melting furnaces and RS manufacturing lines at Johns Manville.

The emission limit for both new and existing melting furnaces is 0.50 lb of PM/ton of glass pulled. The emission limit for an existing RS manufacturing line is 1.2 lb of formaldehyde/ton of glass pulled and the emission limit for a new RS manufacturing line is 0.80 lb of formaldehyde/ton of glass pulled. The emission standard for RS manufacturing lines is formulated as the sum of the MACT floor emission levels for forming, curing and cooling where process modification is the MACT floor for forming processes, incineration is the MACT floor for the curing ovens, and no control is the MACT floor for the cooling processes.

Johns Manville will be able to comply with the proposed PM limitation since BACT requires a PM emission limitation of 0.25 pounds per ton of glass pulled to satisfy PSD requirements. Johns Manville will be able to comply with the proposed formaldehyde limitation according to stack test data collected June,1994 and April, 1995 which shows an formaldehyde emission rate of 0.768 pounds per ton of glass pulled.

40 CFR 60, Subpart CC (New Source Performance Standard (NSPS) for Glass Manufacturing Plants)
This regulation applies to glass furnaces constructed or modified after June 15, 1979 and produce more than 4,550 kilograms of glass per day. A glass furnace is defined as “a unit comprising a refractory vessel in which raw materials are charged, melted at high temperature, refined, and conditioned to produce molten glass. The unit includes foundations, superstructure and retaining walls, raw material charger systems, heat exchangers, melter cooling system, exhaust system, refractory brick work, fuel supply and electrical boosting equipment, integral control systems and instrumentation, and appendaes for conditioning and distributing molten glass to forming apparatuses. The forming apparatuses, including the float bath used in flat glass manufacturing and flow channels in wool fiberglass and textile fiberglass manufacturing are not considered part of the glass melting furnace.”

Johns Manville originally constructed the gas-fired glass melting furnaces prior to June 15, 1979 and the proposed project does not involve the modification of any of the components of these furnaces. Although the company will be increasing the hours of operation to the furnaces, this is not defined as a modification according to 40 CFR 60.14(e) (Modifications). Therefore, these gas-fired furnaces are not subject to this regulation.

40 CFR 60, Subpart PPP (NSPS for Wool Fiberglass Insulation Manufacturing Plants)
This regulation applies to wool fiberglass insulation manufacturing lines which are comprised of forming sections, curing sections, and cooling sections. According to this regulation, each manufacturing line shall not exceed 11.0 pounds of particulate matter per ton of glass pulled. The manufacturing lines from the proposed modification are in compliance with this rule because 326 IAC 2-2 requires a more stringent PM emission rate.

State Rule Applicability

326 IAC 2-1-3.4 (New Source Toxics Control)
The New Source Toxics Control rule requires any new or reconstructed major source of hazardous air pollutants (HAPs) for which there is no applicable NESHAP shall be required to make the maximum achievable control technology (MACT) determination on a case-by-case basis. The potential HAP emissions increase from this modification do not exceed the major source threshold levels of HAP emissions; therefore, this rule does not apply.

326 IAC 2-2 (Prevention of Significant Deterioration)
The proposed modification for the Lines 2, 3, and 6 Manufacturing Lines (forming, curing, and cooling processes) is subject to the Prevention of Deterioration (PSD) rules for PM, PM_{10}, VOC, and CO because the emissions from these pollutants are above the PSD significant threshold levels reported in 326 IAC 2-2-1. Therefore, the PSD provisions require that this major modification be reviewed to ensure compliance with the National Ambient Air Quality Standards, the applicable PSD air quality increments, and the requirements to apply the best available control technology on the project's emissions.

The *Air Quality Analysis* report included in Appendix A was conducted to show that this major modification does not violate the National Ambient Air Quality Standards (NAAQS) and does not exceed the incremental consumption above 80 percent of the PSD increment for any pollutant. The pre-construction monitoring analysis showed that the PM10 concentration exceeded the pre-construction monitoring deminimis levels specified in 326 IAC 2-2-4(b)(3). Therefore, pursuant to 326 IAC 2-2-4(c)(6), the IDEM shall require Johns Manville to conduct post-ambient monitoring for PM10 for a minimum period of three (3) years to determine the effect of said emissions from the source modification on air quality in the area.

The best available control technologies (BACT) for the facilities covered in this major modification are determined on a case-by-case basis by reviewing similar process controls and new available technologies. In addition, the cost per ton of pollutant removed, energy requirements, and environmental impacts are weighed in IDEM's final decision. Control technology summaries of the facilities covered in this major modification are discussed in the *BACT Analysis Report* included in Appendix B.

326 IAC 5-1-2 (Opacity Emissions)
This rule applies to opacity, not including condensed water vapor, emitted by or from a facility or source. This source is subject to the applicability requirements of 326 IAC 5-1-1(b) and 326 IAC 5-1-2(1). Pursuant to 326 IAC 5-1-2(1), the opacity shall not exceed an average of 40 percent in any one 6 minute averaging period and 60 percent for more than a cumulative total of 15 minutes (60 readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen 1 minute nonoverlapping integrated averages for a continuous opacity monitor) in a 6 minute period.

326 IAC 8-1-6 (VOC Emission Limitations)
Johns Manville has satisfied the requirements of 326 IAC 8-1-6 because it is subject to the more restrictive PSD BACT requirements for VOC pursuant to 326 IAC 2-2. A discussion on PSD BACT requirements for VOC emissions is included in Appendix B.

326 IAC 11-4 (Fiberglass Insulation Mnaufacturing)
Johns Manville is not subject to the requirements of this rule because these requirements apply only to facilities located in Shelby County that produce fiberglass insulation by the superfine (flame blown) process existing on June 19, 1979.

326 IAC 6-3-2 (Particulate Matter Emissions Limitations from Process Operations)
According to this rule, if any limitation established by this rule is inconsistent with applicable limitations contained in 326 IAC 6-1 (Nonattainment Area Particulate Limitations), or contained in 326 IAC 12 (NSPS), then the limitation contained in this rule (326 IAC 6-3) shall not apply. This major modification is subject to the requirements of 326 IAC 6-1-14 and 326 IAC 12, and therefore shall be required in lieu of this rule.

326 IAC 6-1-14 (Nonattainment Area Particulate Limitations)
Johns Manville is proposing that all SIP PM emission limitations be revised to reflect the emission limitations defined in the PSD evaluation for this modification. The emission limitations relating to the melt furnaces, forming processes, curing ovens, and oil boiler for Schulers (now operating under the name of Johns Manville International, Inc.) are set forth in the 1996 Edition of the *Indiana Environmental Rules: Air.* The table below represents the existing and proposed SIP emission limitations.

Existing SIP Description Process	Existing SIP Emission Limitations			Proposed SIP Description Process	Proposed SIP Emission Limitations		
	ton/yr	lbs/mmBtu	gr/dscf		ton/yr	lbs/mmBtu	gr/dscf
Units 112&113 Recoupex Reverb	7.8		0.01	Lines 2&3 Natural Gas Melt Furnaces	7.8		0.003
Unit 116 Recoupex Reverb Furnace	0.1		0.02	Line 6 Electric Melt Furnace	3.9		0.0072
Unit 112 Curing Oven	19.5		0.025	Line 2 Curing Oven	0		0.025
Unit 113 Curing Oven	19.5		0.02	Line 3 Curing Oven	27.4		0.02
Unit 116 Curing Oven	4.0		0.02	Line 6 Curing Oven	6.2		0.02
Unit 112 Forming Line	31.2		0.02	Line 2 Forming Process	58.3		0.02
Unit 113 Forming Line	58.5		0.02	Line 3 Forming Process	123.6		0.02
Unit 116 Forming Line	15.6		0.02	Line 6 Forming Process	24.5		0.02
Oil Boiler 25 MMBTU/Hr.	1.5	0.150		25 MMBtu/hr Natural Gas Boiler	1.5	0.0137	

The proposed permit requires that the Permittee abide by the existing regulations (i.e. 326 IAC 6-1-14). The OAM is currently in the process of a rule change to revise the SIP emission limitations based on information provided by Johns Manville. When the rule change becomes final, the Permittee may request an amendment to this permit to reflect the new emission limitations. In the interim, the Permittee may petition the state for a variance request which allows the Permittee to operate at the proposed emission limitations. The variance may be granted if the Permittee demonstrates undo hardship of existing SIP emission limitations. The Permittee must also demonstrate compliance with the NAAQS and PSD increment, which has been satisfied under this permit review project (see Appendix A).

Air Toxic Emissions

Indiana presently requests applicants to provide information on emissions of the 187 hazardous air pollutants set out in the Clean Air Act Amendments of 1990. These pollutants are either carcinogenic or otherwise considered toxic and are commonly used by industries. They are listed as air toxics on the Office of Air Management (OAM) Construction Permit Application Form Y.

This modification will emit levels of air toxics less than those which constitute a major source according to Section 112 of the 1990 Amendments to Clean Air Act as shown in the following table:

Pollutant	Rate (lb/hr)	Rate @ 8760 hrs/yr (ton/yr)
Formaldehyde	2.1	6.60
Phenol	3.3	6.80
TOTAL		13.40

Methodology:
Rate ton/yr = (rate lb/hr)*(hr/yr of operation)

Conclusion

The modification to the fiberglass manufacturing plant will be subject to the conditions of the attached proposed **Construction Permit No. CP-177-5873, Plt ID No. 177-00006.**

Indiana Department of Environmental Management
Office of Air Management

Addendum to the
Technical Support Document for New Construction and Operation

Source Name:	Johns Manville International, Inc.
Source Location:	814 Richmond Avenue, Richmond, Indiana 47374
County:	Wayne
Construction Permit No.:	CP-177-5873-00006
SIC Code:	3296
Permit Reviewer:	Michele Williams

On March 3, 1999, the Office of Air Management (OAM) had a notice published in the *Palladium Item*, Richmond, Indiana stating that Johns Manville International, Inc., had applied for a construction permit relating to changes in the forming processes of Lines 2, 3, and 6 to manufacture a more consistent wool fiberglass product and an increase the production capacities of the existing manufacturing lines. The detailed description of equipment can be found in the proposed construction permit. The particulate matter (PM and PM_{10}) emissions will be controlled by the use of high efficiency fabric filters, high efficiency air filters, venturi scrubber, water mist suppression, and process modifications that make the system more efficient. The notice also stated that OAM proposed to issue a permit for this installation and provided information on how the public could review the proposed permit and other documentation. Finally, the notice informed interested parties that there was a period of thirty (30) days to provide comments on whether or not this permit should be issued as proposed.

Comment 1:

Written comments on various clarifications, additions and changes to the construction permit were received by Johns Manville International, Inc., on March 29, 1999.

Response 1:

(a) The OAM has approved the following clarifications, additions and changes to the construction permit. It should be noted that the bold-face characters represent language that has been added to the proposed permit conditions and strikeout characters represent language that has been removed from the proposed permit conditions:

1. The responsible official in Section A.1 has been changed from “Joseph Flegel” to “Robert W. Martin” due to the retirement of Joseph Flegel.

2. The last sentence of the description stated in Section A.2(c)(2) and Section D.3(~~c~~ **a**)(2) of the construction permit have been revised as follows for clarification:

   “A water spray is applied to the airstream to control particulate matter emissions from unbonded product ~~and a~~ **before the airstream is exhausted to Stack S3. A** water spray and venturi scrubber are both utilized to control particulate matter emissions from bonded product....”

3. The last sentence of the description stated in Section A.2(d)(1) and Section D.3(~~d~~ **a**)(1) of the construction permit have been revised as follows for clarification:

   “**During bonded production,** ~~The~~ particulate emissions in the airstream are controlled by a high efficiency air filter (HEAF)....”

4. The first sentence of the description stated in Section A.2(d)(2) and Section D.3(~~d~~ **a**)(2) of the construction permit has been revised as follows to correctly identify the Line 6 forming process. The Line 6 forming process is not equipped with a cooling chamber:

   "One (1) existing Line 6 natural gas-fired curing oven ~~and cooling process~~ for bonded product."

5. The description stated in Section A.2(f)(2) and Section D.5(~~f~~ **a**)(2) of the construction permit has been revised as follows for clarity:

   "One (1) existing cold end housekeeping system**.** ~~with~~ **The** particulate emissions in the airstream are controlled by a baghouse...."

6. Section A.3 of the construction permit has been revised as follows to correct a typographical error:

   "This permit shall supersede ~~the~~ all previous permits issued to the source."

7. The description numbering system in Sections D.2 through D.6 have been corrected.

8. The stack testing limits established in the table of Operation Condition D.2.3(a) have been revised as follows to be consistent with Operation Condition D.2.1(b). The limits in Operation Condition D.2.1(b) are consistent with the emission calculations, the BACT analysis performed, and the existing and proposed SIP revisions:

Stack	Process	PM [1]	NOx [2]
S5	Line 2	0.25 lb/ton ~~0.003~~ **0.01** gr/dscf	6.82 lbs/hr
S5	Line 3	0.25 lb/ton ~~0.003~~ **0.01** gr/dscf	
S7	Line 6	0.45 lb/ton ~~0.0072~~ **0.020** gr/dscf	

9. Operation Conditions D.2.3(b)(4), D.3.4(b)(4), and D.4.3(b)(4) have been revised as follows using updated standard language to better clarify corrective action requirements related to a noncompliant stack test:

   "~~Whenever the results of the stack test performed exceed the level specified in this permit, appropriate corrective actions shall be implemented within thirty (30) days of receipt of the test results. These actions shall be implemented immediately unless notified by OAM that they are acceptable. The Permittee shall minimize emissions while the corrective actions are being implemented.~~ **When the results of a stack test performed exceed the level specified in any condition of this permit, the Permittee shall take appropriate corrective actions. The Permittee shall submit a description of these corrective actions to IDEM, OAM, within thirty (30) days of receipt of the test results. The Permittee shall take appropriate action to minimize emissions from the affected facility while the corrective actions are being implemented. IDEM, OAM shall notify the Permittee within thirty (30) days, if the corrective actions taken are deficient.**

The Permittee shall submit a description of additional corrective actions taken to IDEM, OAM within thirty (30) days of receipt of the notice of deficiency. IDEM, OAM reserves the authority to use enforcement activities to resolve noncompliant stack tests."

10. The VOC and CO emission limits established in the tables of Operation Condition D.3.1(a)(1) and (2) have been converted as follows from "pound per ton" limits to "pound per hour" limits. The conversions do not change or increase the emissions from the process. The conversions were necessary to properly reflect emissions from both the process operations (variable) and the natural gas combustion of the burners (fixed):

D.3.1(a)(1) Unbonded Product Limitations

Facility	Pollutant Limitations, ~~lb/ton of glass pulled~~		
	PM **(lb/ton glass pulled)**	VOC **(lbs/hr)**	CO **(lbs/hr)**
Line 2 Forming Process	3.70	~~1.88~~ **6.78**	~~5.82~~ **21.0**
Line 3 Forming Process	3.70	~~1.89~~ **6.78**	~~5.82~~ **21.0**
Line 6 Forming Process	3.70	~~1.88~~ **3.77**	~~12.7~~ **25.3**

D.3.1(a)(2) Bonded Product Limitations

Facility	Pollutant Limitations, ~~lb/ton of glass pulled~~		
	PM **(lb/ton glass pulled)**	VOC **(lbs/hr)**	CO **(lbs/hr)**
Line 3 Forming Process	2.19	~~5.15~~ **18.6**	~~5.82~~ **21.0**
Line 3 Curing Process	0.56	~~1.18~~ **4.25**	~~0.61~~ **1.22**
Line 3 Cooling Process	0.29	~~0.20~~ **0.72**	~~0.19~~ **0.70**
Line 6 Forming Process	7.84	~~4.33~~ **8.66**	~~12.7~~ **25.3**
Line 6 Curing Process	1.99	~~0.75~~ **1.50**	~~0.61~~ **1.22**

11. The first sentence of Operation Condition D.3.2 of the construction permit has been revised as follows to correct a typographical error:

"Pursuant to 326 IAC 2-2-3(a)(3), the ~~furnaces~~ **forming, curing, and cooling processes** shall comply with...."

12. Operation Condition D.3.2(c) of the construction permit has been revised as follows to correctly identify the Line 6 forming process. The Line 6 forming process is not equipped with a cooling chamber:

"Line 6 ~~Forming, Curing, and Cooling~~ **Forming and Curing** Process shall not exceed...."

13. Operation Condition D.3.2(d) and (e) of the construction permit has been revised as follows:

(a) The facility descriptions in the table have been revised for correctness.

(b) The requested changes to the unbonded glass production limitations for Line 2 and Line 6 from Johns Manville are incorrect. The production limits are based on the annual PM emission limits in the existing SIP. However, the OAM discovered an error of the production limitation for the Line 3 Forming Process , which has been corrected. This number has also been corrected in the Quarterly Report Form.

(c) The OAM has added production limit conditions for bonded product in Operation Condition D.3.2(d) for Lines 3 and 6. The additions to this condition satisfy the intent of Operation Condition D.3.2(e). Therefore, Operation Condition D.3.2(e) has been removed from the construction permit. The production limit conditions for bonded product have also been added to the Quarterly Report Form

Operation Condition D.3.2(d) and (e) have been revised as follows to reflect the above changes:

3.2(d) The production of unbonded product from each line shall be limited as follows to demonstrate compliance with the annual PM emission limitations required by Operation Condition D.3.1(b):

Facility	Unbonded Glass Production Limitation, tons/yr
Line 2 Forming Process	16,865
Line 3 Forming ~~/Curing~~ Process	~~31,536~~ **31,622** [1]
Line 6 Forming ~~/Curing~~ Process	8,432 [2]

[1] **For every ton of bonded product produced from Line 3, the above limitations shall be reduced by 2.67 tons.**

[2] **For every ton of bonded product produced from Line 6, the above limitations shall be reduced by 2.17 tons.**

~~3.2(e) The production of unbonded product from Lines 3 and 6 also have the capability to produce a bonded product. Therefore, the following conversion factor shall be used to determine compliance with the above production limitations:~~

~~1 ton bonded product = 2.1 tons unbonded product~~

14. The table presented in Operation Condition D.3.4(a) has been revised to reflect the following changes:

(a) The process descriptions have been revised as follows for clarification.

(b) The VOC and CO limits have been converted from "lbs/ton" to "lbs/hr" to be consistent with the revised Operation Condition D.3.1(a)(1) and(2).

D.3.4(a) Performance Tests

Stack	Process	PM [1]	NOx [2]	VOC	CO	HAP [3]
S2	Line 2 **Forming** - Unbonded	3.70 lb/ton 0.02 gr/dscf	2.03 lbs/hr	~~1.88 lb/ton~~ **6.78 lbs/hr**	~~5.82 lb/ton~~ **21.0 lbs/hr**	
S2	Line 6 **Forming** - Unbonded	3.70 lb/ton 0.02 gr/dscf	2.18 lbs/hr	~~1.88 lb/ton~~ **3.77 lbs/hr**	~~12.7 lb/ton~~ **23.5 lbs/hr**	
S2	Line 6 **Forming/Curing** - Bonded	9.83 lb/ton 0.02 gr/dscf	3.02 lbs/hr	~~5.08 lb/ton~~ **10.2 lbs/hr**	~~13.3 lb/ton~~ **26.5 lbs/hr**	2.28 lb/hr Single HAP; 5.71 lb/hr Combined HAP
S3	Line 3 **Forming** - Unbonded	3.70 lb/ton 0.02 gr/dscf	2.03 lbs/hr	~~1.88 lb/ton~~ **6.78 lbs/hr**	~~5.82 lb/ton~~ **21.0 lbs/hr**	
S3	Line 3 **Forming/ Curing/Cooling** - Bonded	3.04 lb/ton 0.02 gr/dscf	4.0 lbs/hr	~~6.53 lb/ton~~ **23.6 lbs/hr**	~~6.62 lb/ton~~ **22.9 lbs/hr**	2.28 lb/hr Single HAP; 5.71 lb/hr Combined HAP

15. Operation Condition D.3.6 of the construction permit has been revised as follows to correctly identify the Line 6 forming process. The Line 6 forming process is not equipped with a cooling chamber:

"The HEAFs associated with the ~~lines 3 and 6 curing ovens and cooling processes~~ **Line 3 curing and cooling process and the Line 6 curing process** shall be operated at all times when its associated process is in operation."

16. Operation Condition D.3.6(a) of the construction permit has been revised as follows to reflect the correct operating range of the HEAF:

"...pressure drop across the HEAF shall be maintained within a pressure drop range of ~~1.5~~ **1.0** and 7.0 inches of water...."

17. Operation Condition D.3.6(e) of the construction permit has been revised to appropriately reflect the physical components of the HEAF:

"In the event that a ~~bag's~~ **media** failure has been observed and emissions temporarily exceed...."

18. Operation Condition D.3.8 of the construction permit has been revised as follows to correctly identify under what conditions the scrubber shall be operated:

"The scrubber shall be constructed and operated prior to the manufacture of bonded product on Line 3. The scrubber shall be operated at all times when Line 3 is in operation for the production of ~~both~~ bonded ~~and unbonded~~ product."

19. Operation Condition D.5.3(a)(2) of the construction permit has been revised as follows to reflect the appropriate Operation Condition:

"daily logs of the parameters established in Operation Condition D.5.2(a), semi-annual logs of the parameters established in Operation Condition D.5.2(b) and quarterly logs of the parameters established in Operation Condition D.5.2(d) shall be performed to demonstrate compliance with the PM emission limitations required by Operation Condition ~~D.5.1(a)(3)~~ **D.5.1(b)**."

20. The rated capacity of the standby generator with a fuel usage limit of 10,500 gallons/12 consecutive month period has been corrected in the Quarterly Report Form. The rated capacity of this standby generator has been changed from "635 hp" to "700 hp". This revision is consistent with Section D.6.

(b) The OAM did not approve the following clarifications, additions and changes to the construction permit requested by Johns Manville as discussed below:

1. Johns Manville requested all statements regarding the current and proposed maximum glass pull rates be stricken from all sections in which they appear in the construction permit and supporting documentation. Johns Manville made this request based on confidentiality as Johns Manville considers production information to be confidential business information. The OAM determined that the maximum production capacities are necessary to demonstrate compliance with the limits established in the construction permit. This information is not related to the process mechanics or raw material components of the product and therefore shall remain in the construction permit and supporting documentation.

(c) The OAM duly notes the following clarifications, additions, and changes to the Technical Support Document. However, the Technical Support Document will not be revised for purposes of historical documentation.

1. Page 1 - The third line of the paragraph should read "product and ~~an~~ increase the production".

2. Page 1 Stack Summary - The stack temperatures for S10 through S13 as well as S85 and S86 should be 68^0F.

3. Page 2 - The Line 3 Forming Section has not made bonded product since 1991. Therefore, Line 3 could not have operated outside the PM10 limitation as stated. Please remove this reference from the sentence.

4. Page 4 - The last line on the page should read "1995 which shows a formaldehyde...."

5. Page 5 - The first sentence on the page should read "...June 15, 1979, which produced more than...."

6. Page 5 - The second paragraph, third line should read "...will be increasing the hours of operation of the furnaces...."

7. Page 6 - In the paragraph addressing 326 IAC 6-1-14, the reference to "Schulers" should read "Schuller". The OAM referenced "Schulers" because this is how it is stated in 326 IAC 6-1-14. However, OAM does recognize that the correct spelling is "Schuller".

8. Page 7 - The proposed grain loading SIP limit for Lines 2 & 3 furnaces should be 0.01 gr/dscf.

9. Page 7 - The proposed grain loading SIP limit for Line 6 furnace should be 0.02 gr/dscf.

10. Page 7 - The Line 2 Curing oven has been removed. Therefore, the proposed grain loading is irrelevant.

11. Page 7 - The proposed SIP limit for the Line 6 Forming Process should be 45.4 tons/year to account for both unbonded and bonded product.

(d) The OAM duly notes the following clarifications, additions, and changes to the BACT Review Document. However, the Technical Support Document will not be revised for purposes of historical documentation.

1. Page 1, Melting Furnaces - Production increase related emissions are subject to PSD BACT. Existing controls are BACT.

2. Page 5, Line 3 Manufacturing Line - This should read “Manufacturing Line 3" as was done on Page 2 for Line 2. In addition, the sentence that follows should read “...manufacture 100 percent unbonded product or 100 percent bonded product.”

3. Page 6 - In the last paragraph a scrubber should be added to the BACT for the bonded process. A scrubber is listed in the preceding table.

4. Page 8, Line 3 BACT for CO - The first line should read “...CO are produced as a result....”

5. Page 9, Line 6 Manufacturing Line - This should read “Manufacturing Line 6" as was done on Page 2 for Line 2. In addition, the sentence that follows should read “...manufacture 100 percent unbonded product or 100 percent bonded product.”

6. Page 9, Line 6 BACT for Unbonded Product for PM/PM10 - The first sentence is incorrect. The molten glass rate for Line 6 is 4,000 lb/hr and the molten glass rate for Lines 2 & 3 is 7,200 lb/hr.

7. Page 9, Line 6 Manufacturing for Bonded Product - Remove the words “The production of unbonded product.”

Comment 2: In addition to the above comments, the OAM has made additional clarifications, additions, and changes to the construction permit.

Response 2: The changes are as follows (bold-face characters represent language that has been added to the proposed permit conditions and strikeout characters represent language that has been removed from the proposed permit conditions):

1. Based on information provided by Johns Manville, all emission calculations and modeling analysis assume that PM is equal to PM10. For clarification, all references to “PM” in the construction permit has been revised to “PM/PM10" to recognize that PM is equal to PM10. In addition the following clarification to PM/PM10 testing requirements in Operation Conditions D.2.3(a), D.3.4(a), and D.4.3(a) has been made:

   “**PM/PM_{10} means that the PM limit and the PM_{10} limit are the same. PM shall be measured in accordance with 40 CFR 60, Appendix A, Method 5. PM_{10} shall be measured in accordance with 40 CFR 51, Appendix M, Methods 201A and 202.** ~~Particulate Matter (PM) Compliance Tests consist of filterable PM (40 CFR 60, Appendix A, Method 5) and condensible PM (40 CFR 51, Appendix M, Method 202).~~”

2. Operation Condition D.3.4(a) has been expanded to clarify that the performance testing for Lines 3 and 6 are to be tested for both bonded and unbonded products as follows:

   “Pursuant to 326 IAC 2-1-3 (Construction and Operating Permit Requirements), the following compliance stack tests shall be performed within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up. **Lines 3 and 6 shall be performed for both bonded and unbonded products**....”

3. Operation Condition D.2.3 has been revised as follows for correctness. This is consistent with the limitations in Operation Condition D.2.1(d):

Stack	Process	PM [1]	NOx [2]
S5	Line 2	0.25 lb/ton 0.01 gr/dscf	~~6.82~~ **3.41** lbs/hr
S5	Line 3	0.25 lb/ton 0.01 gr/dscf	**3.41** lbs/hr
S7	Line 6	0.45 lb/ton 0.020 gr/dscf	**No Testing Required**

4. Operation Condition D.1.2 has been revised as follows to clarify that recordkeeping is required:

"Visible emission notations shall be performed for the storage and handling facilities at least once each day that loading and conveying operations are conducted. **A trained employee will record whether emissions are normal or abnormal**...."

The OAM has also added Operation D.1.3 to specify the recordkeeping requirements.

"**(a) The Permittee shall maintain daily logs of the visible emission notations required by Operation Condition D.1.2.**

(b) Records shall be retained for a minimum period of five (5) years. Records of the previous three (3) years shall be kept at the source location and be made available within one (1) hour upon verbal request of an IDEM, OAM, representative. Records of the remaining two (2) years may be stored elsewhere provided they be made available to the OAM within thirty (30) days after written request.

(c) Records of required monitoring information shall include, where applicable:

(1) the date, place, and time of sampling or measurements;

(2) the dates analyses were performed;

(3) the company or entity performing the analyses;

(4) the analytic techniques or methods used;

(5) the results of such analyses; and

(6) the operating conditions existing at the time of sampling or measurement.

(d) Support information shall include, where applicable:

(1) copies of all reports required by this permit;

(2) all original strip chart recordings for continuous monitoring instrumentation;

(3) all calibration and maintenance records; and

(4) records of any required preventive maintenance and corrective actions that were implemented. Such records shall briefly describe what was done and indicate who did it. Such records may include, but are not limited to work orders, quality assurance procedures, quality control procedures, operator's standard operating procedures, manufacturer's specifications or their equivalent, and equipment "troubleshooting" guidance.

(e) All record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance."

Air Quality Analysis

Introduction

Johns Manville International, Inc., formally Schuller International, Inc., has applied for a Prevention of Significant Deterioration (PSD) Permit to modify their fiber glass facility in Wayne County, Indiana. The site is located in Richmond at Universal Transverse Mercator (UTM) coordinates 678300 East and 4411300 North. Wayne County is designated attainment for all criteria pollutants. All air quality modeling analysis treats the proposed change to the fiber glass facility as a major modification. The modification will involve increasing throughput on the existing lines by utilizing higher capacity rotary spinners in the fiber glass forming process.

The air quality impact analysis portion of the permit application is to accomplish the following objectives and are individually addressed in this document:

A. Establish which pollutants require an air quality analysis.

B. Provide analysis of actual stack height with respect to Good Engineering Practice (GEP).

C. Determine the significant ambient air impact area of the source's emissions and establish background air quality levels.

D. Demonstrate that the source will not cause or contribute to a violation of the National Ambient Air Quality Standard (NAAQS) or Prevention of Significant Deterioration (PSD) increment.

E. Perform analysis of any air toxic compound for a health risk factor on the general population.

F. Perform a qualitative analysis of the source's impact on general growth, soils, vegetation and visibility in the impact area with emphasis on any Class I areas. The nearest Class I area is Kentucky's Mammoth Cave National Park which is more than 100 kilometers from the proposed site in Wayne County, Indiana.

G. Summary of Air Quality Analysis.

Woodward-Clyde initially prepared the PSD permit application for Johns Manville which was received by the Office of Air Management (OAM) on May 15, 1996. Johns Manville submitted the last permit modeling application amendments on September 12, 1997. This document provides the Air Quality Modeling Section's review of the PSD permit application including an air quality analysis performed by OAM.

Executive Summary

Johns Manville has applied for a PSD construction permit to modify their existing facility in Richmond, Wayne County, Indiana. PM_{10} and CO emission rates associated with the proposed modification exceeded the significant emission rates for PSD. Modeling results showed CO impacts to be less than the significant impact level. PM_{10} modeling results showed no violation of the NAAQS or PSD increment. An air toxic analysis show no concentrations above .5% of the PEL.

Part A

Pollutants Analyzed for Air Quality Impact

The PSD requirements, 326 IAC 2-2, apply in attainment and unclassifiable areas and require an air quality impact analysis of each regulated pollutant emitted in significant amounts by a major stationary source or modification. Significant emission levels for each pollutant are defined in 326 IAC 2-2-1. Particulate Matter less than 10 microns (PM_{10}), Nitrogen Dioxide (NO_2), Volatile Organic Compounds (VOC)(an Ozone (O_3) precursor), Sulfur Dioxide (SO_2) Carbon Monoxide (CO), and Lead (Pb), are the pollutants that will be emitted from the fiber glass facility. Therefore, an air quality analysis is required for these pollutants which exceeded their significant emission rates as shown in Table 1:

TABLE 1
Significant Emission Rates for PSD

POLLUTANT	SOURCE EMISSION RATE	SIGNIFICANT EMISSION RATE	PRELIMINARY AQ ANALYSIS REQUIRED
	(tons/year)	(tons/year)	
PM_{10}	169.00	15.0	Yes
NO_2	29.6	40.0	No
O_3(VOCs)	83.5	100	No
CO	187.1	100.0	Yes
Pb	.006	0.6	No
SO_2	.9	40	No

The TSP SIP contains emissions limitations for several sources located at the Richmond fiber glass plant. As part of the proposed modification, new emissions from some of these sources will exceed the existing SIP limits. Therefore, modeling will be conducted to demonstrate that increasing the SIP limits above current levels will not cause a violation of the NAAQS. The existing SIP limits are stated in terms of TSP. The NAAQS for TSP has been replaced by standards for PM_{10}. Since all particulate emissions from the Richmond Plant are in the PM_{10} size range, the SIP modeling analysis will consider PM_{10} emissions rather than TSP emissions. The NAAQS analysis completed for the PSD portion will be used for the SIP modeling study.

Part B

Stack Height Compliance with Good Engineering Practice (GEP)

Stacks should comply with GEP requirements established in 326 IAC 1-7-1. If stacks are lower than GEP, excessive ambient concentrations due to aero-dynamic downwash may occur. Stacks which are taller than 65 meters (213 feet) are limited to GEP stack height for establishing emission limitations. The GEP stack height takes into effect the distance and dimensions of nearby structures which would affect the downwind wake of the stack. The downwind wake is considered to extend five times the lesser of the structure's height or width. A GEP stack height is determined for each nearby structure by the following formula:

Hg = H + 1.5L where: Hg is the GEP stack height
H is the structure height
L is the structure's lesser dimension (height or width)

Since most of the stack heights at the fiber glass facility are below GEP stack height, the effect of aerodynamic downwash will be accounted for in the air quality analysis for the proposed modification.

Part C

Significant Impact Level/Significant Impact Area and Background Air Quality Levels

Johns Manville and OAM performed an air quality modeling analysis to determine if the source exceeded the significant impact levels (concentrations). If the source's concentrations exceed these levels, further refined air quality analysis is required. For PM_{10}, refined modeling is required since maximum off-property concentrations are above PSD significant impact levels. Significant impact levels for Class II PSD areas are defined by the time periods in Table 2 with all maximum OAM modeled concentrations.

OAM performed their own air quality modeling analysis. OAM reset the anemometer height in their modeling analysis to 6.7 meters instead of the default value of 10 meters which Johns Manville used. This explains the higher concentration values that are seen in the Johns Manville permit application.

TABLE 2
Significant Impact Analysis

POLLUTANT	TIME AVERAGING PERIOD	MAXIMUM MODELED IMPACTS	SIGNIFICANT IMPACT LEVEL	REFINED AQ ANALYSIS REQUIRED
		(ug/m^3)	(ug/m^3)	
PM_{10}	24 Hour	25	5	Yes
PM_{10}	Annual	5.8	1	Yes
CO	1 Hour	87	2000	No
CO	8 Hour	40	500	No

For each pollutant that exceeded the significant impact level, a significant impact area was determined. Based on the Johns Manville's modeling results, the resulting significant impact areas from the proposed modification for PM_{10} is 2.9 kilometers.

In Johns Manville's permit application, Table 3-9 list the Johns Manville sources which were included in the modeling analysis.

Pre-Construction Monitoring

Modeling results indicate PM_{10} impacts were above pre-construction monitoring de minimis levels specified in 326 IAC 2-2. Table 3 shows the results of the pre-construction monitoring analysis.

Table 3

Pre-construction Monitoring Analysis

POLLUTANT	TIME AVERAGING PERIOD	MAXIMUM MODELED CONCENTRATION	De MINIMIS VALUE	PRE-CONSTRUTION MONITORING TRIGGERED?	REPRESENTATIVE DATA AVAILABLE
		(ug/m^3)	(ug/m^3)		
PM_{10}	24 hour	25	10.0	Yes	Yes

The preconstruction monitoring analysis shows that PM_{10} exceeds the deminimus level. Therefore, pursuant to 326 IAC 2-2-4(C)(6), the IDEM shall require Johns Manville to conduct post-construction ambient monitoring for PM_{10}. This post-construction monitoring will be used to determine the effects of Johns Manville's emissions from this modification on the air quality in the surrounding area.

Background Concentrations

Background concentrations for use in the NAAQS analysis are required since the results of the consultant's modeling for PM_{10} concentrations exceeded the significant impact levels. Existing monitoring data was used for the background concentrations which are located in Table 4. Although the monitoring sites are located 25 kilometers from the fiber glass facility, it is considered representative of the air quality in this region. The monitoring sites collected pollutant data from 1994 to 1996 for PM_{10}. For the 24 hour background concentration, the second highest monitoring value was used. The annual background concentration was taken from maximum annual values. This policy for establishing background concentrations allows for a more conservative view of ambient air quality to insure a worst-case scenario.

Part D

Analysis of Source Impact on NAAQS and PSD Increment for PM_{10}

Johns Manville's modeling used Industrial Source Complex Short Term (ISCST3)Version 95250 for PM_{10} emissions. OAM modeling used BEEST for Windows, Version 5.03b for checking PM_{10} emissions modeling. Building downwash was taken into account since Johns Manville stacks did not meet GEP stack height.

The meteorological data used in the ISC3 models consisted of surface data from the Dayton, Ohio National Weather Service station merged with the mixing height data from Dayton, Ohio for the five year period (1986-1990). The meteorological data was obtained from the EPA Support Center for Regulatory Air Models' Electronic Bulletin Board and processed using EPA procedures. For the preliminary modeling analysis, Johns Manville utilized a rectangular receptor grid extending 15 km in all directions. Plant line receptor spacing of 50m was implemented. Beyond the plant line, nominal receptor spacing near the Richmond Plant was 100m. Receptors more than 1 km, but less than 5 km away from Johns Manville's property boundary were spaced at 500m intervals. Beyond 5 km, receptor spacing of 1 km was used. For the full impact analysis, the receptor grid was modified to form a new grid large enough to cover only the PM_{10} SIA. If maximum impacts were predicted at an outer (500m or 1 km spacing) receptor, hot spot modeling was conducted to verify that the maximum impact was determined. This involved placing a small 100m spacing receptor grid around the outer receptor in question and remodeling the appropriate time period. OAM utilized the same receptor network in their modeling. Modeling was performed by the using ISCST3 for PM_{10} using the emission rates listed in Tables 7-2, 7-3, 7-4 of the PSD application. The emission rates used in the consultant's modeling used maximum emission rates. OAM performed modeling using ISCST3.

The consultant used Bowman Environmental Engineering GEP-BPIP, Version 95086 for calculating the wind direction specific building heights and widths of the structure for input to the ISCST3 model. OAM used BEEST for Windows Version 5.03b which incorporates the GEP-BPIP model used for building height and width calculations for input to the ISCST3 model. These calculations take into effect the influence of building wake effects for the fiber glass facility. Most of the emission stacks are below Good Engineering Practice (GEP) stack height.

NAAQS Compliance Analysis and Results

Emission inventories of PM_{10} sources within a 50 kilometer radius of the facility were supplied to the consultants by IDEM's Aerometric Information Retrieval System (AIRS). IDEM approved a screening method, using the SCREEN3 model, to eliminate NAAQS and PSD sources that had no significant impact in the fiber glass facility's significant impact area for PM_{10}. This method modeled all NAAQS and PSD sources in a 50 kilometer radius from the site. All sources beyond the 50 km screening radius with emissions exceeding 500 tons per year were screened with SCREEN3 model. Sources shown to cause a significant impact were included in the full impact analysis using ISC3. Any source that modeled less than the significant impact in the significant impact area of the fiber glass facility was eliminated from the NAAQS and PSD inventories and was not included in refined air quality modeling analysis.

OAMs NAAQS modeling for second highest 24 hour and annual concentrations for PM_{10} was conducted to compare to their respective NAAQS limits. Modeling results are shown in Table 4. All maximum modeled concentrations of PM_{10} for every time-averaged period during the five years were below NAAQS limits and further modeling was not required.

TABLE 4
NAAQS Analysis

POLLUTANT	YEAR	TIME-AVERAGING PERIOD	MAXIMUM CONCENTRATION	BACKGROUND CONCENTRATION	TOTAL	NAAQS LIMIT
			(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)
PM_{10}	1990	2nd high 24 hour	76.8	50.6	127.4	150
PM_{10}	1986	Annual	12.6	24	36.6	50

Analysis and Results of Source Impact on PSD Increment

Maximum allowable increases (PSD increments) are established by 326 IAC 2-2 for PM_{10}. This rule also limits a source to no more than 80 percent of the available PSD increment to allow for future growth. Since the impacts for PM_{10} from the fiber glass facility modeled above significant impact levels, a PSD increment analysis for the existing major sources in Wayne County and its surrounding counties was required.

TABLE 5

PSD Increment Analysis

POLLUTANT	YEAR	TIME-AVERAGING PERIOD	MAXIMUM CONCENTRATION	PSD INCREMENT	PERCENT IMPACT ON THE PSD INCREMENT	BELOW 80% AVAILABLE INCREMENT
			(ug/m^3)	(ug/m^3)		
PM_{10}	1987	2nd high 24 hour	22.1	30	74%	Yes
PM_{10}	N/A	Annual	0	17	0%	Yes

Table 5 shows the maximum concentrations for PM_{10} during the five year period (1986-1990) and compared to 80% of the available PSD increment. Results of the PSD increment analysis for PM_{10} showed no violations of the 80 percent available PSD increment for any of the pollutants for any of the time-averaged periods.

Part E

Hazardous Air Toxics Analysis and Results

The Office of Air Management presently requests data concerning the emission of 189 Hazardous Air Pollutants (HAPs) listed in the 1990 Clean Air Act Amendments (CAAA) which are either carcinogenic or otherwise considered toxic and may be used by industries in the State of Indiana. These substances are listed as air toxic compounds on the State of Indiana, Department of Environmental Management, Office of Air Management's construction permit application Form Y. For existing sources, any one HAP over 4 tons/year or all HAPs with total emissions over 10 tons/year will be subject to toxic modeling analysis. The results of the toxic modeling analysis is listed in Table 6.

TABLE 6
Air Toxic Compounds and Emission Rates

POLLUTANT	EMISSION RATES	8 HOUR CONCENTRATION	PEL	% of PEL
	(tons/yr)	ug/m3		
formaldehyde (HCHO)	6.6	1.19	930	.13%
phenol	6.8	1.96	19,000	.01%

Part F

Additional Impact Analysis

Johns Manville's PSD permit application provided an additional impact analysis. This analysis included an impact on economic growth, soils, vegetation and visibility. The close proximity to a population of commercial and industrial sources to provide goods and services will deter the need for new commercial and industrial growth. The source anticipates fewer than 100 employees will be hired from this local area. Because this is a small number of employees hired inside the local area, the air quality impact due to residential growth is negligible. Thus, there should be negligible impact on air quality in the area as a result of the construction and operation of the proposed modification to the fiber glass facility.

According to the modeled concentrations for $PM_{10,}$ there are no soils which might be adversely affected by the operation of the fiber glass facility. Additionally, the maximum modeled concentrations for all criteria pollutants are below the threshold limits necessary to have adverse impacts on surrounding vegetation.

The nearest Class I area to Johns Manville is Mammoth Cave National Park located approximately 323 km to the south in Kentucky well outside the 100 km Class I range requiring a Class I visibility analysis. Woodward-Clyde performed a Class I visibility analysis. However, an analysis was conducted to assess visibility impacts in the surrounding Class II areas. The methodology for this analysis was identical to that for a Class I analysis, including use of Class I visibility criteria. The VISCREEN model was used to assess visibility impacts due to the project. Results indicated that the Class I criteria would not be exceeded at distances beyond about 22 km from the facility.

Finally, the results of the additional impact analysis conclude the operation of the proposed modification by Johns Manville will have no significant impact on economic growth, soils, vegetation or visibility in the immediate vicinity or on any Class I area.

Part G

Summary of Air Quality Analysis

Johns Manville has applied for a PSD construction permit to modify their existing facility in Richmond, Wayne County, Indiana. The PSD application was prepared by Woodward-Clyde of Littleton, Colorado and by Johns Manville. Wayne County is designated as attainment for all criteria pollutants. $PM_{10,}$ and CO emission rates associated with the proposed modification exceeded the respective significant emission rates. Modeling results taken from the latest version of the ISCST3 model showed CO impacts were predicted to be less than the significant impact level. Refined modeling for PM_{10} showed no violations of the NAAQS. PSD increment consumption analysis was necessary for PM_{10}. Results from the PSD increment analysis for the proposed fiber glass facility showed no increment consumption above 80% of the available PSD increment for PM_{10}. An air toxic analysis was required and showed no concentrations above 0.5% of the PEL. There was no significant impact on the nearest Class I area, which is Mammoth Cave National Park in Kentucky. Additional impact analysis showed no significant impact on economic growth, soils, vegetation or visibility in the areas surrounding the proposed fiber glass facility modification.

BEST AVAILABLE CONTROL TECHNOLOGY (BACT) REVIEW

Johns Manville is proposing to increase the production capacities of the existing manufacturing lines which results in an increased production capacity to 30 percent. As a result, the PM, PM10, VOC and CO are the PSD significant thresholds which requires Prevention of Significant Deterioration (PSD) review pursuant to 326 IAC 2–2. Part of this PSD review includes a best available control technology (BACT) analysis in accordance with the top-down guidance policy outlined in the 1990 draft USEPA *New Source Review Workshop Manual*. BACT is defined in this manual as "an emission limitation based on the maximum degree of reduction of each pollutant subject to regulation under this ACT emitted from or which results from any major emitting facility, which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such facility through application of production processes and available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of each such pollutant. In no event shall application of 'best available control technology' result in emissions of any pollutants which will exceed the emissions allowed by any applicable standard established pursuant to section 111 or 112 of this Act."

BACT was performed for each modified facility of the source which includes the forming, curing and cooling processes for Lines 2, 3, and 6. BACT was not performed for the raw material handling, storage and batching equipment, the melt furnaces, and the shredding and packaging areas for Lines 2, 3, and 6 because these facilities have not been modified.

Raw Material Handling, Storage, and Batching Equipment

The glass fiber manufacturing process begins with raw material handling, storage and batching. Raw material shipment is accomplished via rail and truck, and once on site, the materials are stored in eight batch silos. Raw materials in rail cars are bottom unloaded into the proper silo. Raw materials in the batch silos include, but are not limited to, sand, borax, lime, nepheline syenite and soda ash. On an as-needed basis, measured quantities of raw materials are transferred from the batch silos, mixed in a mixing bin and transferred to four day bins via an enclosed conveyor. The day bins function as short-term holding areas for the mixed raw material prior to the melting process. The raw material handling, storage, and batching equipment are not subject to BACT review because this equipment has not been modified in this proposed modification.

Melt Furnaces

The second phase of the manufacturing process is melting the raw materials. Raw material is slowly and continuously fed from the day bins to the melting furnaces. There are three melting furnaces at the facility, one furnace dedicated to each forming line. Lines 2 and 3 utilize gas fired furnaces, while Line 6 uses an electric melter. The molten material flows from the furnace/melter to the forehearth before entering the next stage of processing which is fiber forming and collection. The melt furnaces are not subject to BACT review because this equipment has not been modified in this proposed modification.

Manufacturing Lines - Forming, Curing, and Cooling Processes

The third phase of the manufacturing process is the manufacturing lines, which consists of fiber forming, curing and cooling sections. A continuous stream of molten glass flows from a melting furnace and enters the center of a rotating spinner. The rotary spinner (RS) method is the fiber forming method used at the Johns Manville plant. Centrifugal force thrusts the molten glass onto the inner wall of the spinner and through hundreds of small orifices in the spinner wall to form glass threads. As the threads of molten glass exit the spinner, a high velocity air jet attenuates (stretches) the threads into fibers where a binder adhesive can be applied as the glass fibers are forced downward. The fibers are carried in the airstream towards a moving collection chain where they are captured for the next stage of processing. For certain products, a binder is applied to the glass fibers so that they will more readily adhere to one another.

Lines 2, 3, and 6 are capable of manufacturing unbonded product (no binder added), while only Lines 3 and 6 are capable of manufacturing bonded product (binder added). For the bonded products, the manufactured fiber glass blanket passes through an oven where it is sized and the binder is cured. After the curing operations, bonded products are passed through a cooling operation in which ambient air is drawn through the blanket. Unbonded products bypass the curing and cooling processes. The bonded and unbonded fibers produced in these manufacturing lines are then transferred to the shredding and packaging areas.

Manufacturing Line 2 - Line 2 is limited to the production of unbonded product only. Unbonded product is manufactured in the forming process, and because the unbonded product does not add a binder in the forming process, no curing or cooling is necessary.

Line 2 BACT for PM/PM10

Process modifications consisting of fiber manufacture techniques, non-application of binder to the fiber (which generates the majority of the PM emissions), and application of a water spray are the current control practices implemented on the forming sections for the manufacture of unbonded product. These control technologies are the proposed PM BACT for the production increase to the forming section of each manufacturing line for unbonded product. The combined PM control efficiency from these control techniques is 86 percent. The following table represents a comparison of the proposed BACT limitation with other limitations from the RBLC, NSPS, and the proposed NESHAP:

Facility	PM/PM10 Emission Limitations, lb/ton glass pulled						
	Proposed BACT	Proposed Control	NSPS (Subpart PPP)	Proposed NESHAP	RBLC		
					Source	Control	Limit
Manu-facturing Line 2	3.70	Process Modifica-tions + Water Spray	11.0*	none	Certainteed, KS	Wet ESP	3.63 (PM) 2.02 (PM_{10})
					Schuller, OH	Scrubber	1.92 lb/hr
					Knauf, AL	Scrubber	5.34

*Emission limitation is the same for both new and existing manufacturing lines

The proposed PM emission limitation for the manufacturing line 2 of unbonded product compares favorably to recent PSD BACT determinations. The following add-on control devices have been identified as feasible PM control technologies in conjunction with the current process modifications for manufacturing line 2:

Control Alternative	% Control Efficiency	Inlet PM Emission Rate (tpy)	PM Emission Reduction (tpy)	Economic Impacts	
				Annualized Cost ($/yr)	Cost Effectiveness ($/ton)
Wet ESP	78 92.5	58.3 58.3	45.5 54.2	1,098,778 1,098,778	24,163 20,273

Dry Rotary Drum Filter	80	Johns Manville is implementing a pilot program at another plant to reduce PM emissions generated in the forming process; however, the results are at this point inconclusive. Consequently, according to the BACT guidance, "technologies in the pilot scale testing stages of development would not be considered available for BACT review."			
Scrubber	72	58.3	42.0	858,385	20,449
Wet Rotary Drum Filter	60	58.3	35.0	601,643	17,200

The costs associated with an add-on control in conjunction with the existing process modifications are prohibitive. The environmental impacts from solid wastes or waste water generated from an add-on control and the energy impacts to operate an add-on control do not justify the small amount of additional PM removed from the process. Therefore, **non-application of binder to the fiber and application of a water spray are considered PM/PM10 BACT** for this process. PM/PM10 emissions from manufacturing line 2 of unbonded product shall not exceed **3.70 lb/ton of glass pulled**.

Line 2 BACT for VOC

Process modifications consisting of fiber manufacture techniques, non-application of binder to the fiber (which generates the majority of the VOC emissions), and application of a water spray are the current control practices implemented on the forming sections for the manufacture of unbonded product. These control technologies are the proposed VOC BACT for the production increase to the forming section of each manufacturing line for unbonded product. The combined VOC control efficiency from these control techniques is 63 percent. The following table represents a comparison of the proposed BACT limitations with other limitations from the RBLC, NSPS, and the proposed NESHAP:

Facility	VOC Emission Limitations, lb/ton glass pulled						
	Proposed BACT	Proposed Control	NSPS (Subpart PPP)	Proposed NESHAP	RBLC		
					Source	Control	Limit
Manu-facturing Line	1.88	Process Modifica-tions + Water Spray	none		Certainteed Corp, KS	Process Mods - 30-50% comb control	1.84

The proposed VOC emission limitation for manufacturing line 2 for unbonded product compares favorably to recent PSD BACT determinations. The following add-on control devices have been identified as feasible VOC control technologies in conjunction with the current process modifications for manufacturing line 2:

Control Alternative	% Control Efficiency	Inlet PM Emission Rate (tpy)	PM Emission Reduction (tpy)	Economic Impacts	
				Annualized Cost ($/yr)	Cost Effectiveness ($/ton)
Forming Section, Line 2					
Regenerative Thermal Oxidizer (RTO)	90 (VOC) 95 (CO)	29.7 91.8	26.7 87.2	2,484,501	93,052 28,491
Total Cost Effectiveness for combined VOC and CO removal:					21,813
Adsorber-Concentrator	90 (VOC)	29.7	26.7	2,036,198	76,262
Biofilter	90 (VOC)	29.7	26.7	1,597,178	59,819

The costs associated with an add-on control in conjunction with the existing process modifications are prohibitive. The environmental impacts from solid wastes or waste water generated from an add-on control and the energy impacts to operate an add-on control do not justify the small amount of additional VOC removed from the process. Therefore, **non-application of binder to the fiber and application of a water spray are considered VOC BACT** for this process. VOC emissions from these activities shall not exceed **1.88 lb/ton of glass pulled** for the manufacturing lines of unbonded product.

Line 2 BACT for CO

Significant levels of CO are produced as a result of the fuel-rich mixture supplied to the rotary spinner (RS) burners of the forming section and the rapid cooling of combustion gases. There are no CO limitations established in the RBLC, NSPS, and the proposed NESHAP.

The proposed CO emission limitation for manufacturing line 2 for unbonded product utilizing no control compares favorably to recent PSD BACT determinations. The following add-on control devices have been identified as feasible CO control technologies in conjunction with the current process modifications for the manufacturing lines:

Control Alternative	% Control Efficiency	Inlet CO Emission Rate (tpy)	CO Emission Reduction (tpy)	Economic Impacts	
				Annualized Cost ($/yr)	Cost Effectiveness ($/ton)
Forming Section					
Regenerative Thermal Oxidizer (RTO)	90 (VOC) 95 (CO)	29.7 91.8	26.7 87.2	2,484,501	93,052 28,491
Total Cost Effectiveness for combined VOC and CO removal:					21,813

Two fundamental options are available for minimizing the emissions of CO from the RS burners including improved combustion control at the flame generation point and incineration. There are presently no proven technologies for improved combustion control design. Regenerative incineration is a proven technology, however, the low actual CO emission rates from the forming processes for this project results in very high costs to achieve high efficiency control as shown in the above table. In addition, the removal of CO will generate NOx emissions.

The emission factors presented in EPA AP-42 for the curing section is 3.5 lb/ton material processed. AP-42 states that the CO emissions are "not applicable" to the forming section. However, stack tests performed at other Johns Manville facilities report emissions of 5.82 lb/ton CO from the forming sections. Based on available information, the OAM has determined that **no control is considered CO BACT** for this process. The CO emissions from these activities shall not exceed **5.82 lb/ton of glass pulled** for the manufacturing lines of unbonded product.

Line 3 Manufacturing Line - Line 3 has the flexibility to manufacture 100 percent bonded product or 100 percent bonded product. Therefore, both options were reviewed for BACT.

Line 3 BACT for Unbonded Product for PM/PM10

The analysis performed for manufacturing line 2 for unbonded product is the same for manufacturing line 3 because the maximum molten glass rate is the same. Therefore, **non-application of binder to the fiber and application of a water spray are considered PM/PM10 BACT** for this process. PM/PM10 emissions from manufacturing line 3 of unbonded product shall not exceed **3.70 lb/ton of glass pulled**.

Line 3 BACT for Bonded Product for PM/PM10

Process modifications consisting of fiber manufacture techniques, use of a proprietary binder formulation (inherently less polluting), and application of a water spray are the current control practices implemented on the forming sections of the manufacturing line. The PM control efficiency from these control techniques is 70 percent. The curing and cooling processes are equipped with high energy air filters (HEAFs) that have a PM control efficiency of 65 percent. The proposed PM BACT for manufacturing line 3 of bonded product is the combination of the existing control techniques and a proposed venturi scrubber because it is feasible as shown in the following table:

Control Alternative	% Control Efficiency	Inlet PM Emission Rate (tpy)	PM Emission Reduction (tpy)	Economic Impacts	
				Total Annualized Cost ($/yr)	Total Cost Effectiveness ($/ton)
Forming Section, Line 3					
Wet ESP	78* 93*	123.6	96.4 114.9	1,100,143	11,411 9,566
Dry Rotary Drum Filter	80	Johns Manville is implementing a pilot program at another plant to reduce PM emissions generated in the forming process; however, the results are at this point inconclusive. Consequently, according to the BACT guidance, "technologies in the pilot scale testing stages of development would not be considered available for BACT review."			

Venturi Scrubber	72	123.6	89.0	816,574	9,175
HEAF	40 to 80	123.6	49.4 to 98.9	872,246	17,600 (40%) to 8,820 (80%)
Curing Section, Line 3					
Wet ESP	78	27.4	21.4	221,416	10,360
Venturi Scrubber	68	27.4	18.6	183,961	9,890

* The 93 percent control efficiency is based on a conventional binder. Johns Manville believes that only 78 percent control efficiency would be achievable with the lower input rates due to the proprietary binder

The costs associated with a wet ESP in conjunction with the existing process modifications are prohibitive. However, the cost of a venturi scrubber is cost effective, and therefore shall be constructed and operated in conjuction with the existing process modifications to achieve an overall PM control efficiency of 80 percent which compares favorably to recent PSD BACT determinations as shown in the following table:

Facility	PM/PM10 Emission Limitations, lb/ton glass pulled						
	Proposed BACT	Proposed Control	NSPS (Subpart PPP)	Proposed NESHAP	RBLC		
					Source	Control	Limit
Manu-facture Line 3	3.04	Process Mods + Water Spray + Scrubber	11.0*	none	Certainteed Corp, KS	Wet ESP	3.63 (PM) 2.02 (PM_{10})
					Schuller, OH	Venturi Scrubber	1.92 lb/hr
					Knauf, AL	Venturi Scrubber	5.34
					Indiana Construction Permits		
					Source	Control	Limit
					Knauf	Scrubber + ESP	8.55

*Emission limitation is the same for both new and existing manufacturing lines

Therefore, **use of a proprietary binder formulation (inherently less polluting) and application of a water spray are considered PM/PM10 BACT** for this process. PM/PM10 emissions from the line 3 manufacturing process shall not exceed **3.04 lb/ton of glass pulled for Line 3 for bonded product.**

Line 3 BACT for VOC

The current control practices implemented on manufacture line 3 consists of the use of a proprietary binder formulation (inherently less polluting) for bonded product. Approximately 70 percent of the VOC emissions are eliminated from the use of this proprietary binder formulation. There are no current control practices for the manufacture of unbonded product. The following table represents a comparison of the proposed BACT limitations with other limitations from the RBLC, Indiana construction permits, NSPS, and the proposed NESHAP:

Facility	VOC Emission Limitations, lb/ton glass pulled						
	Proposed BACT	Proposed Control	NSPS (Subpart PPP)	Proposed NESHAP*	RBLC		
					Source	Control	Limit
Manu-facturing Line 3	6.53 (bonded) 1.88 (unbond)	Process Modifica-tions	n/a	none	Certainteed Corp, KS	Process Mods - 30-50% comb control	1.84

The proposed VOC emission limitations for the manufacturing lines for bonded product does not compare favorably to the highest VOC control efficiency of recent PSD BACT determinations. The following add-on control devices have been identified as feasible VOC control technologies in conjunction with the current process modifications for the manufacturing lines:

Control Alternative	% Control Efficiency	Inlet VOC Emission Rate (tpy)	VOC Emission Reduction (tpy)	Economic Impacts	
				Annualized Cost ($/yr)	Cost Effectiveness ($/ton)
Forming Section					
RTO	90 95	81.3 (VOC) 91.8 (CO)	73.2 (VOC) 87.2 (CO)	2,484,501	33,941 28,492
Total Cost Effectiveness for combined VOC and CO removal for Line 3:					15,489
Adsorber-Concentrato r	90	81.3	73.2	2,036,198	27,828
Biofilter	90	81.3	73.2	1,597,178	21,828
Curing Section					
RTO	90	18.6	16.7	340,660	20,400
Adsorber-Concentrato r	90	18.6	16.7	371,376	22,238
Biofilter	90	18.6	16.7	278,558	16,680

To justify elimination of a control alternative that has been effectively employed in the same source category, the BACT guidance requires "the applicant...demonstrate to the satisfaction of the permitting agency that costs of pollutant removal for the control alternative are disproportionately high when compared to the cost of control for that particular pollutant and source in recent BACT determinations. If the circumstances of the differences are adequately documented and explained in the application and are acceptable to the reviewing agency they may provide a basis for eliminating the control alternative."

Based on the facts and information presented above, the OAM has determined that the cost per ton of pollutant removal for the control alternatives discussed above are disproportionately high when compared to recent BACT determinations. Therefore, VOC emissions from manufacturing line 3 shall not exceed **1.88 lb/ton of glass pulled for Line 3 for unbonded product** and **6.53 lb/ton of glass pulled for Line 3**.

Line 3 BACT for CO

Significant levels of CO are produced as a result of the fuel-rich mixture supplied to the rotary spinner (RS) burners of the forming section and the rapid cooling of combustion gases. There are no CO limitations established in the RBLC, NSPS, and the proposed NESHAP.

The proposed CO emission limitation for manufacturing line 3 for either bonded or unbonded product compares favorably to recent PSD BACT determinations. The following add-on control devices have been identified as feasible CO control technologies in conjunction with the current process modifications for the manufacturing lines:

Control Alternative	% Control Efficiency	Inlet CO Emission Rate (tpy)	CO Emission Reduction (tpy)	Economic Impacts	
				Annualized Cost ($/yr)	Cost Effectiveness ($/ton)
Forming Section, Line 3					
Regenerative Thermal Oxidizer (RTO)	90 (VOC) 95 (CO)	81.3 91.8	73.2 87.2	2,484,501	33,941 28,492
Total Cost Effectiveness for combined VOC and CO removal for Line 3:					15,489

Two fundamental options are available for minimizing the emissions of CO from the RS burners including improved combustion control at the flame generation point and incineration. There are presently no proven technologies for improved combustion control design. Regenerative incineration is a proven technology, however, the low actual CO emission rates from the forming processes for this modification results in very high costs to achieve high efficiency control as shown in the above table. In addition, the removal of CO will generate NOx emissions.

The emission factors presented in EPA AP-42 for the curing section is 3.5 lb/ton material processed. AP-42 states that the CO emissions are "not applicable" to the forming section. However, stack tests performed at other Johns Manville facilities report emissions of only 0.61 lb/ton CO from similar curing sections, and 5.82 lb/ton CO and from similar forming sections. Based on available information, the OAM has determined that **no control is considered CO BACT** for this process. The CO emissions from this manufacturing line shall not exceed **6.62 lb/ton of glass pulled from Line 3**.

Line 6 Manufacturing Line - Line 6 has the flexibility to manufacture 100 percent bonded product or 100 percent bonded product. Therefore, both options were reviewed for BACT.

Line 6 BACT for Unbonded Product for PM/PM10

The analysis performed for manufacturing line 2 for unbonded product is the same for manufacturing line 6 because the maximum molten glass rate is the same. Therefore, **non-application of binder to the fiber and application of a water spray are considered PM/PM10 BACT** for this process. PM/PM10 emissions from manufacturing line 6 of unbonded product shall not exceed **3.70 lb/ton of glass pulled**.

Line 6 Manufacturing Line for Bonded Product - Johns Manville has limited the maximum production of bonded product to 3120 hours, which correlates to 36%. The production of unbonded product. The following economic analysis was performed to determine control technology feasibility:

Control Alternative	% Control Efficiency	Inlet PM Emission Rate (tpy)	PM Emission Reduction (tpy)	Economic Impacts	
				Total Annualized Cost ($/yr)	Total Cost Effectiveness ($/ton)
Forming Section, Curing and Cooling Section, Line 6					
Wet ESP	78* 93*	51.6**	40.2 48.0	796,019	19,800 16,580
Dry Rotary Drum Filter	80	Johns Manville is implementing a pilot program at another plant to reduce PM emissions generated in the forming process; however, the results are at this point inconclusive. Consequently, according to the BACT guidance, "technologies in the pilot scale testing stages of development would not be considered available for BACT review."			
Venturi Scrubber	72	51.6	37.2	607,179	16,320
HEAF	80	51.6	41.3	468,629	11,350

* The 93 percent control efficiency is based on a conventional binder. Johns Manville believes that only 78 percent control efficiency would be achievable with the lower input rates due to the proprietary binder

** The 51.6 tons PM per year is based on 24.5 tons/year (forming of bonded product), 6.2 tons/yr (curing/cooling of bonded product), and 20.9 tons/yr from unbonded product

To justify elimination of a control alternative that has been effectively employed in the same source category, the BACT guidance requires "the applicant...demonstrate to the satisfaction of the permitting agency that costs of pollutant removal for the control alternative are disproportionately high when compared to the cost of control for that particular pollutant and source in recent BACT determinations. If the circumstances of the differences are adequately documented and explained in the application and are acceptable to the reviewing agency they may provide a basis for eliminating the control alternative."

Based on the above facts and information, the OAM has determined that costs associated with the control alternatives are disproportionately high when compared to the cost of control for that particular pollutant and source in recent BACT determinations. Therefore, PM emissions from manufacturing line 6 shall not exceed **9.83 lb/ton of glass pulled for Line 6** and the annual PM emissions shall be limited to **30.7 tons per year.**

Line 6 BACT for VOC

The current control practices implemented on manufacture line 6 consists of the use of a proprietary binder formulation (inherently less polluting) for bonded product. Approximately 70 percent of the VOC emissions are eliminated from the use of this proprietary binder formulation. There are no current control practices for the manufacture of unbonded product. The following table represents a comparison of the proposed BACT limitations with other limitations from the RBLC, Indiana construction permits, NSPS, and the proposed NESHAP:

Facility	VOC Emission Limitations, lb/ton glass pulled						
	Proposed BACT	Proposed Control	NSPS (Subpart PPP)	Proposed NESHAP*	RBLC		
					Source	Control	Limit
Manu-facturing Line 6	1.88 (unbond) 5.08 (bonded)	Process Modifica-tions	n/a	none	Certainteed Corp, KS	Process Mods - 30-50% comb control	1.84

The proposed VOC emission limitations for the manufacturing lines for bonded product does not compare favorably to the highest VOC control efficiency of recent PSD BACT determinations. The following add-on control devices have been identified as feasible VOC control technologies in conjunction with the current process modifications for the manufacturing lines:

Control Alternative	% Control Efficiency	Inlet VOC Emission Rate (tpy)	VOC Emission Reduction (tpy)	Economic Impacts	
				Annualized Cost ($/yr)	Cost Effectiveness ($/ton)
Forming Section					
RTO	90 95	24.1 (VOC) 111 (CO)	21.7 (VOC) 105 (CO)	2,484,501	114,493 23,662
Total Cost Effectiveness for combined VOC and CO removal for Line 6:					19,609
Adsorber-Concentrato r	90	81.3	73.2	2,036,198	27,828
Biofilter	90	81.3	73.2	1,597,178	21,828
Curing Section					
RTO	90	18.6	16.7	340,660	20,400

Adsorber-Concentrator	90	18.6	16.7	371,376	22,238
Biofilter	90	18.6	16.7	278,558	16,680

To justify elimination of a control alternative that has been effectively employed in the same source category, the BACT guidance requires "the applicant...demonstrate to the satisfaction of the permitting agency that costs of pollutant removal for the control alternative are disproportionately high when compared to the cost of control for that particular pollutant and source in recent BACT determinations. If the circumstances of the differences are adequately documented and explained in the application and are acceptable to the reviewing agency they may provide a basis for eliminating the control alternative."

Based on the facts and information presented above, the OAM has determined that the cost per ton of pollutant removal for the control alternatives discussed above are disproportionately high when compared to recent BACT determinations. Therefore, VOC emissions from the manufacturing line shall not exceed **1.88 lb/ton of glass pulled for Line 6 for unbonded product** and **5.08 lb/ton of glass pulled for Line 6 for bonded product**.

Line 6 BACT for CO

Significant levels of CO are produced ss a result of the fuel-rich mixture supplied to the rotary spinner (RS) burners of the forming section and the rapid cooling of combustion gases. There are no CO limitations established in the RBLC, NSPS, and the proposed NESHAP.

The proposed CO emission limitation for manufacturing line 3 for either bonded or unbonded product compares favorably to recent PSD BACT determinations. The following add-on control devices have been identified as feasible CO control technologies in conjunction with the current process modifications for the manufacturing lines:

Control Alternative	% Control Efficiency	Inlet CO Emission Rate (tpy)	CO Emission Reduction (tpy)	Economic Impacts	
				Annualized Cost ($/yr)	Cost Effectiveness ($/ton)
Forming Section, Line 6					
Regenerative Thermal Oxidizer (RTO)	90 (VOC) 95 (CO)	24.1 111	21.7 105	2,484,501	114,493 23,662
Total Cost Effectiveness for combined VOC and CO removal for Line 6:					19,609

Two fundamental options are available for minimizing the emissions of CO from the RS burners including improved combustion control at the flame generation point and incineration. There are presently no proven technologies for improved combustion control design. Regenerative incineration is a proven technology, however, the low actual CO emission rates from the forming processes for this modification results in very high costs to achieve high efficiency control as shown in the above table. In addition, the removal of CO will generate NOx emissions.

The emission factors presented in EPA AP-42 for the curing section is 3.5 lb/ton material processed. AP-42 states that the CO emissions are "not applicable" to the forming section. However, stack tests performed at other Johns Manville facilities report emissions of only 0.61 lb/ton CO from similar curing sections, and 5.82 lb/ton CO and from similar forming sections. Based on available information, the OAM has determined that **no control is considered CO BACT** for this process. The CO emissions from manufacturing line 6 for bonded and unbonded product shall not exceed **13.3 lb/ton of glass pulled for Line 6**.

Shredding and Packaging Areas for Lines 2, 3, and 6

The unbonded fibers from Lines 2, 3 and 6 and bonded fibers from Line 6 are shredded and then pneumatically transferred to the packaging area where the fibers are separated from the air stream by cyclones. Fiberglass collected in the cyclones is deposited in the packaging hopper and subsequently packaged for sale. The bonded fibers from Lines 3 are transferred in blanket form to an area where the blanket is trimmed, cut to size, and packaged. Scrap material from the trimming and cutting operations is transferred to the blowing insulation process. The shredding and packaging areas are not subject to BACT review because this equipment has not been modified in this proposed modification.